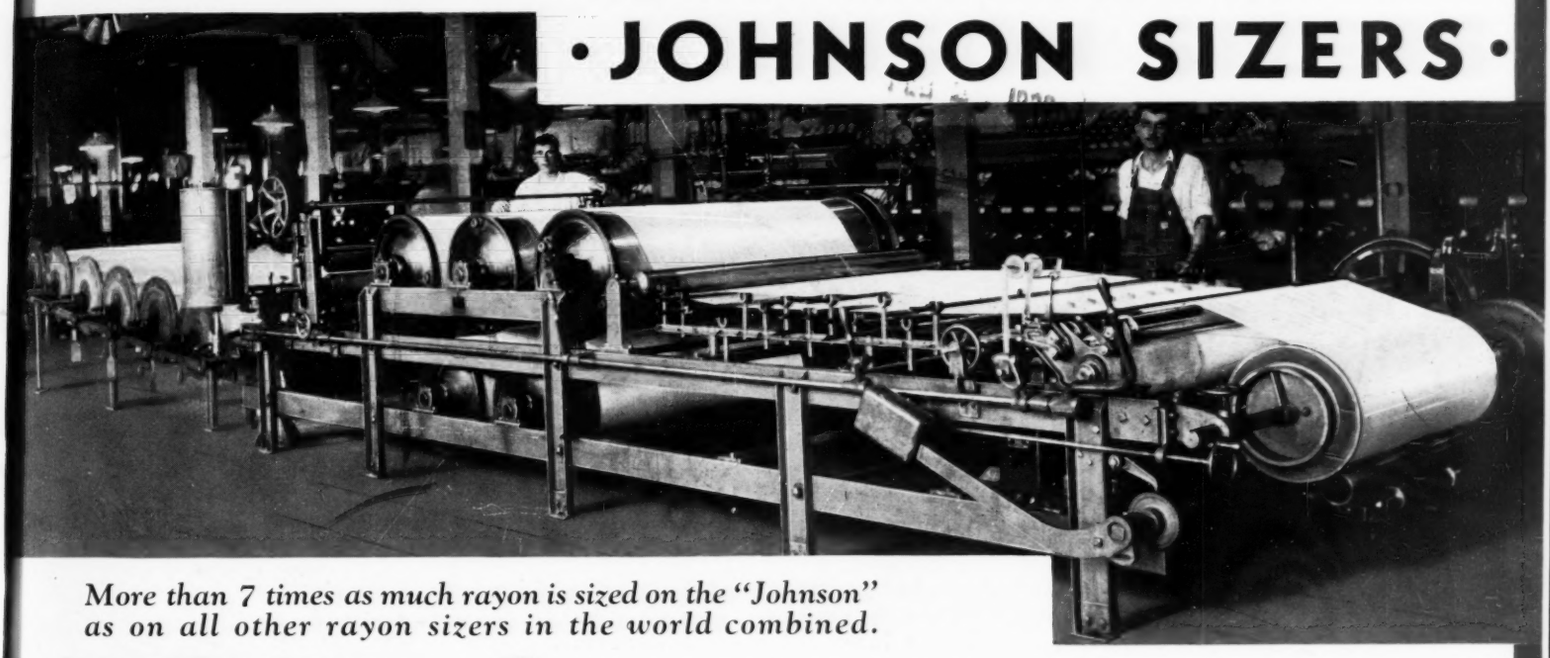
MODERNIZATION AND MAINTENANCE NUMBER
FEBRUARY, 1936

COTTON

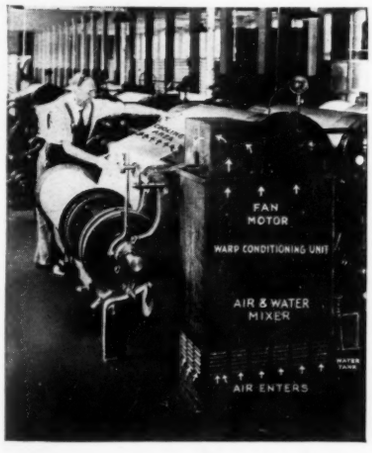
Serving the
TEXTILE INDUSTRIES

Here's Why MANY LEADING MILLS ARE REPLACING THEIR SLASHING EQUIPMENT WITH

·JOHNSON SIZERS·



More than 7 times as much rayon is sized on the "Johnson" as on all other rayon sizers in the world combined.



JOHNSON WARP CONDITIONING UNIT
(Kohut Patents)

A mechanical device which cools the warp and restores moisture to it. All the cylinders of your slasher can be run hot when this unit is used. Sizing production is speeded up and loom efficiency is increased. The warps are turned out soft and pliable and the size is readily removed in the boil off.

FOR reasons of apparent economy, many cotton mills converted their cotton slashers to handle rayon and acetates, when they first took up the manufacture of synthetic yarns.

Today these same mills are rapidly replacing their converted machines with modern Johnson sizers designed especially for sizing rayon and acetate warps. Important reasons for making this change include:

1—The 5 cans of Johnson Sizer are individually controlled for temperature. With graduated heat the delicate warps leave the slasher much softer and more pliable.

2—Production speeds are greater.

3—A positive, quick-change-gear drive replaces the old cone pulley drive between the solution box and the first drying cylinder. This makes possible a positive pre-determination of the required stretch.

4—New Super Quetsch positively assures uniform application of size to the warp thruout the entire run.

Write for descriptive literature and prices.

CHARLES B. JOHNSON

PIERCY and HOLSMAN STS., PATERSON, NEW JERSEY

Represented by

Joseph Barnes, New Bedford, Mass.
Carolina Specialty Co. Charlotte, N. C.
Unisel, Ltd. Manchester, England
A. V. Anthony Santiago, Chile
Roberto Zander Buenos Aires, Argentine

PERFORMANCE (NOT PRICE) DETERMINES VALUE

THE MAN WITH THE TEST TUBE

A Symbol of Superior Yarn Dyeing Performance

The man with the test tube is an integral part of Franklin Process Yarn Dyeing Service. His activities include the following:—

1. The testing by our own specially developed method of every shipment of dyestuffs received by our plants (dyestuffs that do not meet F. P. standards as to strength and purity are rejected).
2. The testing of all necessary processing materials by similarly rigid standards.
3. Constant research to develop new and better dyeing, bleaching and finishing methods.
4. The making of hundreds of sample dyeings just to get ONE new and better shade.
5. Eternal vigilance for methods and materials that will give the textile industry colors equal or better in quality AT LOWER COST.

The man with the test tube is one reason why Franklin Process grew from a small experimental station to the largest custom yarn dyeing service in the world in little more than a decade; why a majority of creators and manufacturers of yarn dyed fabrics, who seek true values, today look to—

FRANKLIN PROCESS

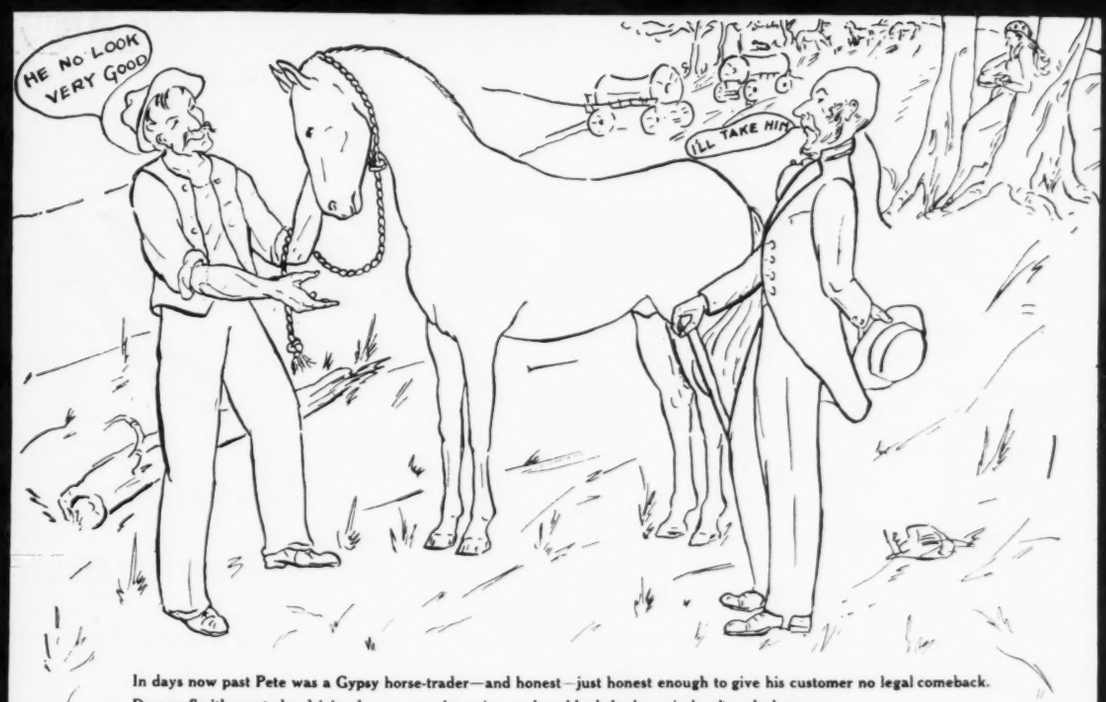
ESTABLISHED 1910

Pioneers in Package Dyeing

Natural Yarns **Colored Yarns** **Glazed Yarns** **Custom Yarn Dyeing** **Dyeing and Processing Machines**

PROVIDENCE • PHILADELPHIA • GREENVILLE • CHATTANOOGA • N. Y. REPRESENTATIVE, 40 WORTH ST.

COTTON is published monthly by W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga. Subscription Rates, United States and Possessions, $1.00 for one year, $2.00 for three years; Canada, $1.50 per year; Foreign Countries, $2.00 per year. Entered as second-class matter at the postoffice, Dalton, Ga., under the Act of March 3, 1879.



In days now past Pete was a Gypsy horse-trader—and honest—just honest enough to give his customer no legal comeback. Deacon Smith wanted a driving horse—at a bargain—and grabbed the bargain he thought he saw. Driving home he discovered his bargain horse was stone blind. Mad? Yes, the maddest Deacon in the whole countryside! He took that horse right back to Pete. No redress. Pete blandly replied: "I tol' you he no look very good."

DEACON SMITH WAS FOOLED BECAUSE HE INVITED IT

It is a Psychological Fact—made use of by those who Sell Substitutes—that when a man Goes Looking for "Something-just-as-good" he is in a Mood to be Easily Fooled

Appearances take the place of Sound Judgment

Those Who Offer You Draper Loom Parts that are "Just as Good"

CAN'T EVEN PROPERLY INSPECT THEIR OWN IMITATIONS

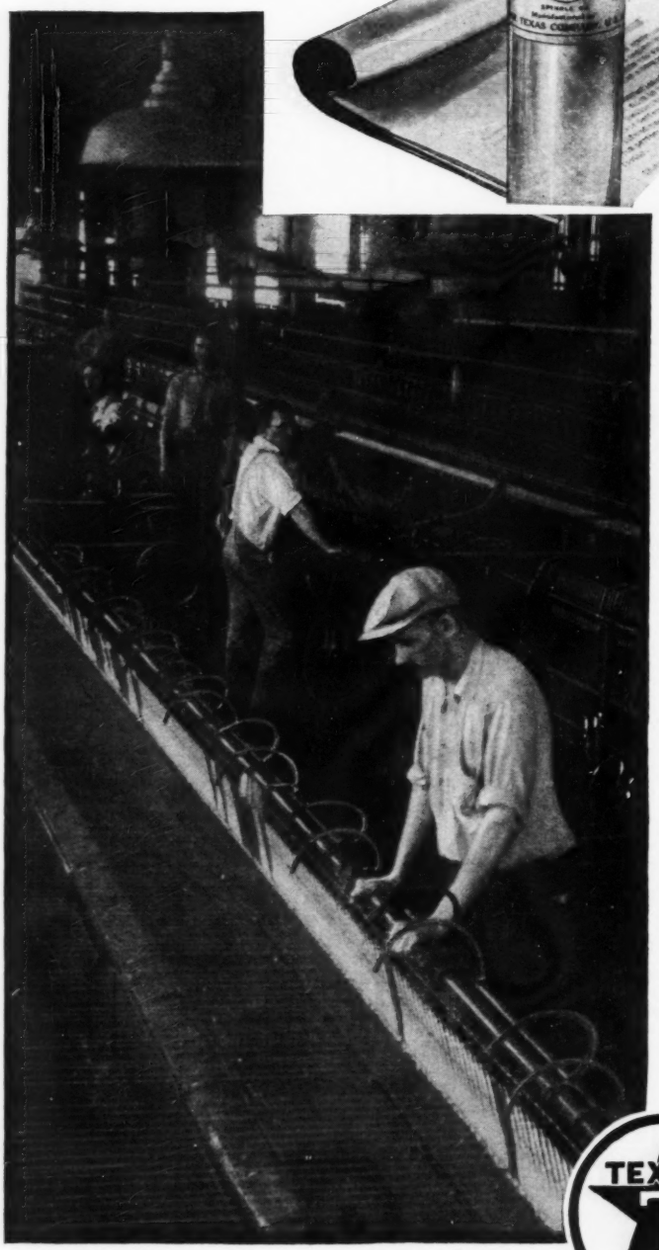
Products of the Foundry are Naturally Subject to Variation—Without our Drawings to start from and Our Jigs and Fixtures to Prevent Certain Known Troubles and Our Knowledge of What to Look Out for—No Inspector Can Protect You from Faults that Will Cause Trouble on Your Looms

YOU FLIRT WITH TROUBLE WHEN YOU BUY ANY BUT DRAPER-MADE PARTS FOR DRAPER LOOMS

DRAPER CORPORATION

Atlanta Georgia Hopedale Massachusetts Spartanburg S C

You would make them *this way*



because you'd be aiming at the same objectives

If *you* were in the oil refining business or if you had an oil refinery in your own mill, you would make your oils and greases to meet the exact conditions in the textile business.

That is the way our technical people work.

In refining Texaco Spindle Oils, they constantly study your need for *oils which are clean.* They produce oils which lubricate efficiently (when properly applied). Thus Texaco Spindle Oils help you eliminate throwing or leaking.

Knowing the importance to you of avoiding drag *and* wear *and* high starting torque, Texaco Refineries have worked out spindle oils with the right characteristics to help you solve these many problems which you face.

For your ball or roller bearings placed where leakage may occur owing to high temperatures, Texaco has developed Starfak Greases. They *keep* their consistency.

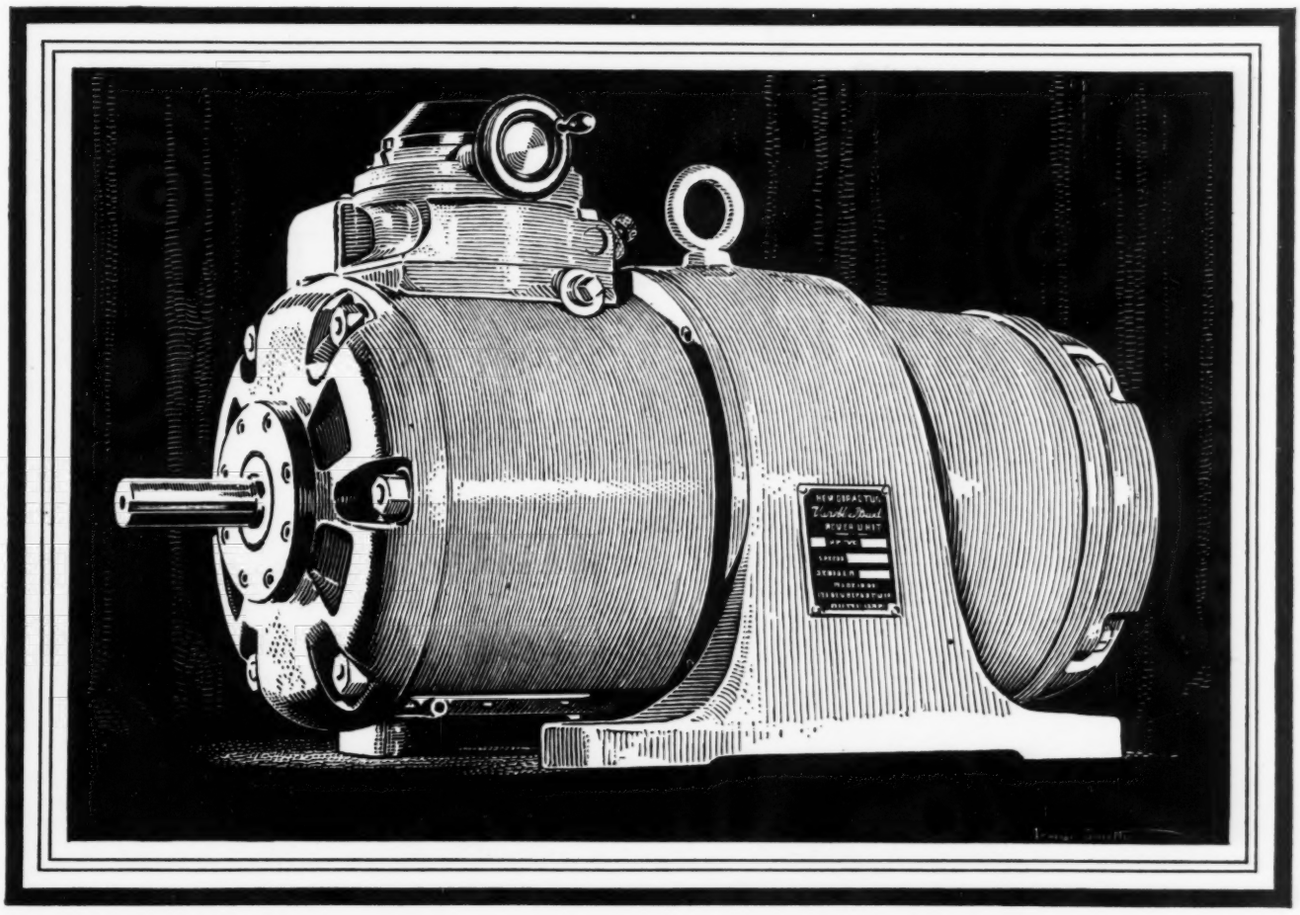
Give the Texaco representative an opportunity *to assist you* to select from among Texaco Spindle Oils the ones that most efficiently meet your specific operating conditions.

They are made the way *you* would make them to improve *your* lubrication.

TEXACO
REG. T. M.

THE TEXAS COMPANY
135 East 42nd Street • New York City
Nation-wide distribution facilities assure prompt delivery

TEXACO *Industrial Lubricants*



A MILLION SPEEDS —

at the touch of a finger

Any Speed — Instantly — Accurately

Exactly *the* speed needed for a job, or a million speeds. TRANSITORQ is *infinitely* adjustable. May be preset for any speed while stationary or changed while running. Automatically starts in low-speed, high-torque position. Acceleration to preselected speed is adjustable.

Positive Drive

Under all load conditions, at all speeds—no uncertainty —no guesswork. Contact of TRANSITORQ driving parts is automatically regulated in exact proportion to input or output torque load. No progressive wear to vary the speeds, upset calculations or require replacement of parts.

Controls of Every Type

Either direct or remote — electrical or mechanical — by temperature, light beam or time periods — full automatic or fingertip control. Processes may be improved or even new methods developed through TRANSITORQ'S ease and adaptability of control.

Compact, Complete

Constant speed motor, infinitely variable speed transmission and control, all in one extremely compact, symmetrical unit. Easily built into any machine — universally mountable, horizontal or vertical, sidewall, ceiling or floor.

Quiet Operation

Rotating parts of TRANSITORQ are symmetrical in shape, inherently in balance. These parts, being in perfectly controlled, rolling contact, function with notable freedom from vibration, resulting in outstanding smoothness and quietness of operation.

Long Lived, Efficient

In TRANSITORQ are embodied the science, workmanship and experience acquired by New Departure over the years in mastery of the ball bearing art. It is rugged, long lived — a dependable and highly efficient driver.

The New Departure Mfg. Company, Bristol, Conn., Detroit, Chicago and San Francisco. Catalog on request.

NEW DEPARTURE *Variable Speed* TRANSITORQ

2357

Spinners Listen To Others . . . .

But Continue To Use . . . .

The Universal Standard Ring Travelers

The Bowen Special Temper
Narrow Round Point
Square Point
Flat, Oval and Round Wire
The Bowen Vertical Steel
The Bowen Vertical Bronze
The Bowen Patented Bevel Edge
The Bowen Patented Vertical Offset
The Bowen Patented Ne-Bow Vertical
For Spinning and Twisting

IF YOU REQUIRE . . . . .

1. *Uniformity*
2. *Uninterrupted and Dependable Performance*
3. *Longer Life*
4. *Quality Product*

First Quality Cotton, Wool, Worsted, Silk and Rayon Yarns are produced only by using ring travelers that dispel any doubt as to their performance and manufacture . . . . . UNIVERSAL STANDARD RING TRAVELERS . . . . . meet these requirements, and more, effect a gratifying saving in ring traveler costs by the extra measure of service and life they assure. . . . . Order them now. . . . . Samples mailed upon request.

U. S. Ring Traveler Company

PROVIDENCE, R. I. GREENVILLE, S. C.

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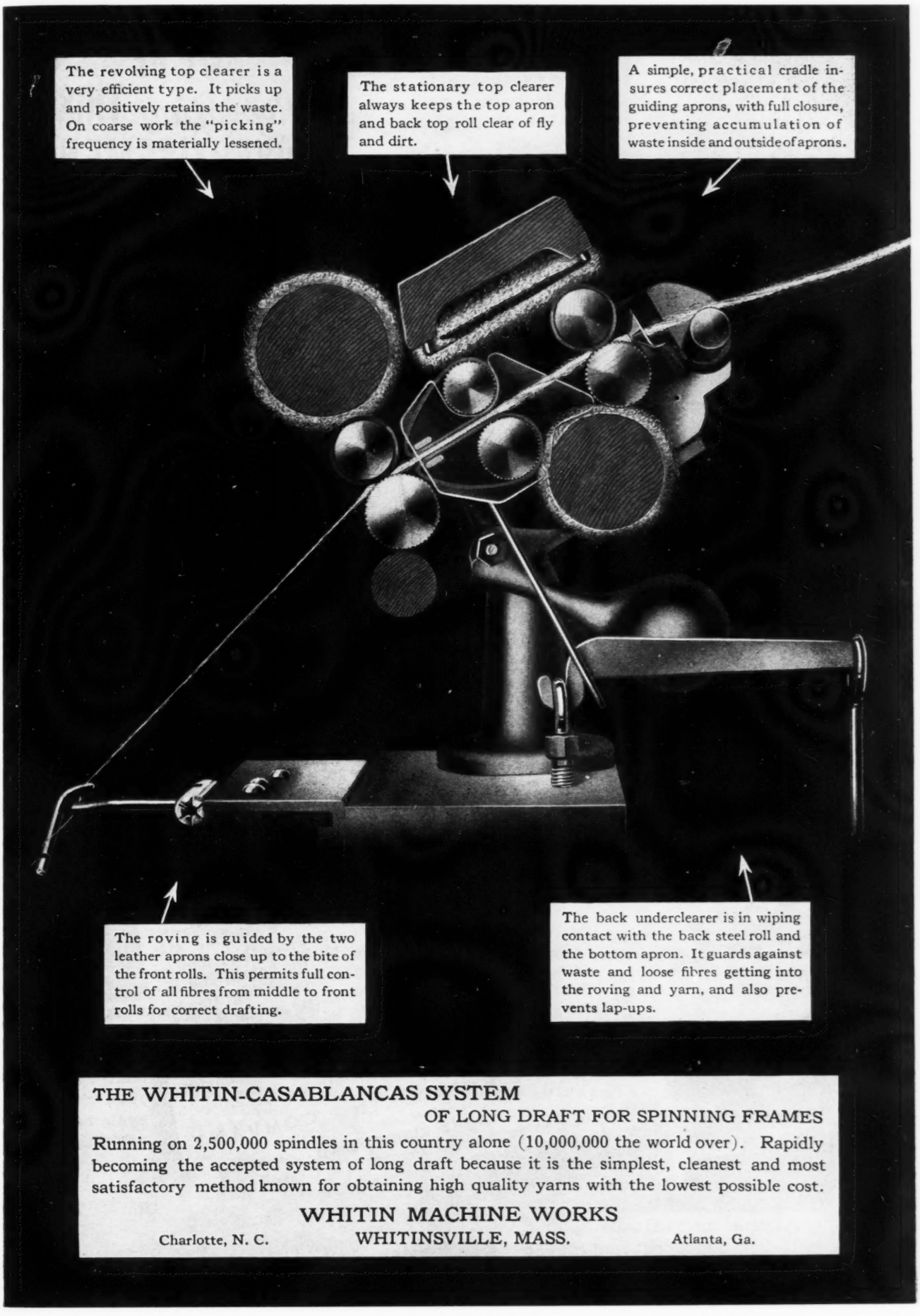
''A TRAVELER FOR EVERY FIBRE''


The revolving top clearer is a very efficient type. It picks up and positively retains the waste. On coarse work the "picking" frequency is materially lessened.
The stationary top clearer always keeps the top apron and back top roll clear of fly and dirt.
A simple, practical cradle insures correct placement of the guiding aprons, with full closure, preventing accumulation of waste inside and outside of aprons.
The roving is guided by the two leather aprons close up to the bite of the front rolls. This permits full control of all fibres from middle to front rolls for correct drafting.
The back underclearer is in wiping contact with the back steel roll and the bottom apron. It guards against waste and loose fibres getting into the roving and yarn, and also prevents lap-ups.

THE WHITIN-CASABLANCAS SYSTEM
OF LONG DRAFT FOR SPINNING FRAMES

Running on 2,500,000 spindles in this country alone (10,000,000 the world over). Rapidly becoming the accepted system of long draft because it is the simplest, cleanest and most satisfactory method known for obtaining high quality yarns with the lowest possible cost.

WHITIN MACHINE WORKS

Charlotte, N. C. WHITINSVILLE, MASS. Atlanta, Ga.

"The photographic proof you furnished in December 'COTTON' should convince every man in a mill....."

"Any practical mill man will recognize this as descriptive of conditions in his own plant....."

WE'RE *Repeating* THIS ADVERTISEMENT

Because it brought such favorable comments, some of which we reproduce here, we are repeating this December advertisement. May its message reach an executive in every mill where AMCO advantages can bring improvement!

UNDER CONDITIONS LIKE THESE

AUTOMATIC SELF CLEANING *Means a Lot*

Consider These Points . . .

- Better Spray
- Automatically Self-Cleaning (both air and water nozzles)
- No Drip—No Feathering Down
- Improved Construction
- Maintains full capacity delivery
- Eliminates manual cleaning labor
- No waste of power

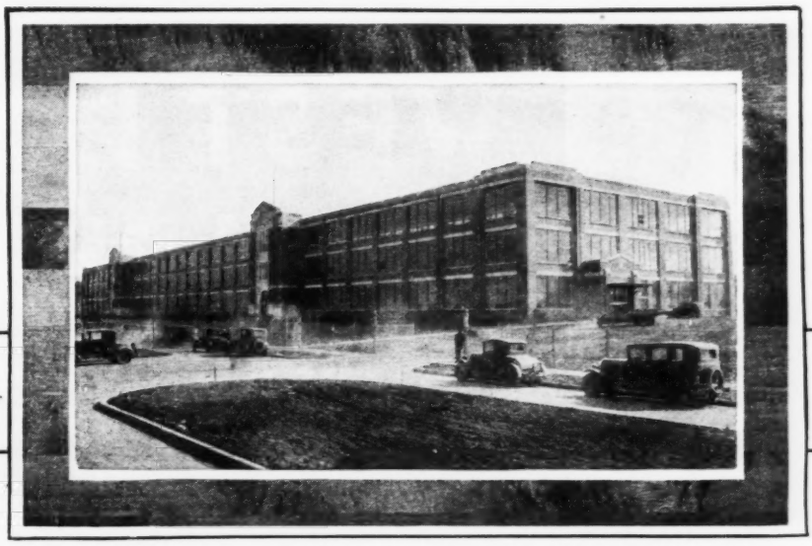
This, gentlemen, is what some atomizers look like after a few months of actual operation. ✓ Fortunately this is an AMCO No. 4 Atomizer — *the first automatically self-cleaning atomizer*. Both air and water nozzles are automatically cleaned whenever the compressed air supply is shut off. ✓ In spite of severe working conditions under which this Atomizer has been operating you will notice that the nozzles and the smooth, concave, hemispherical surface around them are perfectly clean. Lint and fly cannot accumulate around the nozzles, instead they are swept away by the rapid, streamlined currents of induced air. ✓ This Automatically Self-Cleaning Atomizer offers new possibilities for more efficient humidification in new work or on present systems.

AMERICAN MOISTENING COMPANY
Established 1888
PROVIDENCE, RHODE ISLAND
ATLANTA, GA. • BOSTON, MASS. • CHARLOTTE, N. C. • GREENVILLE, S. C.

Another evidence of the progressiveness and leadership of the American Moistening Company in producing efficient humidification equipment for the Textile Industry.

"....made us realize just how important automatic self cleaning is to a mill..."

"..this is the kind of evidence that should open many eyes to the advantages of your equipment."



Goodyear Clearwater Mills No. 2 of the Goodyear Tire & Rubber Company Rockmart, Ga.

Robert and Company, Incorporated Architects and Engineers Atlanta, Ga.

Note: Maple flooring is used throughout this mill, a total of 349,925 sq. ft.

THE EXCELLENT QUALITIES OF MAPLE FLOORING

have made it the Standard finish for Industrial floors

WHETHER you're building a new mill or remodeling the old, the service records of Northern Hard Maple will *prove* what flooring is best for you to use. For in countless mills, where flooring must fill many difficult requirements, Maple floors laid many years ago are still serving their owners with complete satisfaction.

Northern Hard Maple is tough-fibred, tight-grained, resistant to abrasion, lastingly smooth. Will not sliver, splinter or develop ridges—even when subjected to the wear of heavy, rolling trucks with steel casters. Hard Maple actually outwears stone!

It is warm, dry, resilient, comfortable beneath the feet. Reduces fatigue. Simplifies plant alterations—creates no dust injurious to the bearing surfaces of machinery.

Hard Maple is remarkably easy to keep clean and free from lint—requires only brushing. Whether you floor with blocks or strips—with or without pattern—over wood or concrete sub-floors, or over your present floor—Northern Hard Maple will provide a floor that endures and satisfies.

Write for grading rules and complete specifications for laying and finishing MFMA Maple Floors.

Maple Flooring Manufacturers Asso., Chicago, **Illinois**

Gentlemen:

"We consider Maple Flooring to be the best type of finish flooring for textile mills, as well as many other types of industrial plants.

We have used it in this and hundreds of other plants.

The generally excellent qualities of Maple flooring have made it the standard finish for industrial floors."

Robert and Company, Inc.
By A. J. Cooper, Manager
Structural Engineering Dept.

New, penetrating heavy-duty finishes

Seal the surface. Keep out dirt. Resist soil stains. Eliminate scrubbing. Non-slippery. Will not mar, scratch or flake off. Also preservative types which resist the effects of dampness.

★

YOUR LOCAL LUMBER DEALER WILL SUPPLY YOU

with trademarked **MFMA** Maple Flooring—product of the following manufacturers licensed to use the Association trade-mark **MFMA:**

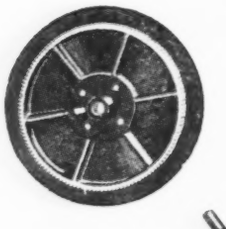
Beck, August C. Company Milwaukee, Wis.
Brown Dimension Company, Manistique, Mich.
Bruce, E. L. Company Memphis, Tenn.
(Mill at Reed City, Mich.)
Cobbs & Mitchell, Inc. Cadillac, Mich.
Connor Lumber & Land Company, Laona, Wis.
(Sales Office, Marshfield, Wis.)
Cummer-Diggins Company Cadillac, Mich.
Farrin Lumber Co., M. B. Cincinnati, Ohio
Holt Hardwood Company Oconto, Wis.
Kerry & Hanson Flooring Co., Grayling, Mich.
Kneeland-Bigelow Company Bay City, Mich.
North Branch Flooring Co. Chicago, Ill.
Northwestern Cooperage & Lumber Co. Gladstone, Mich.
Oval Wood Dish Corp. Tupper Lake, N. Y.
Robbins Flooring Company, Rhinelander, Wis.
Sawyer Goodman Company Marinette, Wis.
Stephenson Company, I. Wells, Mich.
West Virginia Pulp & Paper Co., Cass, W. Va.
Wells, J. W., Lumber Co. Menominee, Mich.
Wisconsin Land & Lbr. Co., Hermansville, Mich.
Yawkey-Bissell Lumber Co., White Lake, Wis.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1794 McCormick Bldg., Chicago, Illinois

See our advertisement Sec. 15/53 in SWEET'S. Let our service and research department assist you with your flooring problems. Write us.

Floor *with* Maple

The letters **MFMA** on Maple, Beech or Birch Flooring signify that the flooring is standardized and guaranteed by the Maple Flooring Manufacturers Association, whose members must attain and maintain the highest standards of manufacture and adhere to manufacturing and grading rules which economically conserve these remarkable woods.
This trade-mark is for your protection. Look for it on the flooring you use. . . . **MFMA**

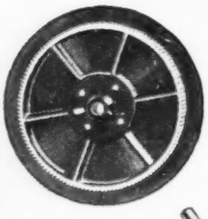


WEST POINT LOOM BEAMS

BEAM HEADS
BEAM BARRELS

● You can definitely increase the efficiency of your looms by the use of West Point Loom Beams. High and low places are eliminated on edge of warp, and consequent bad selvage.

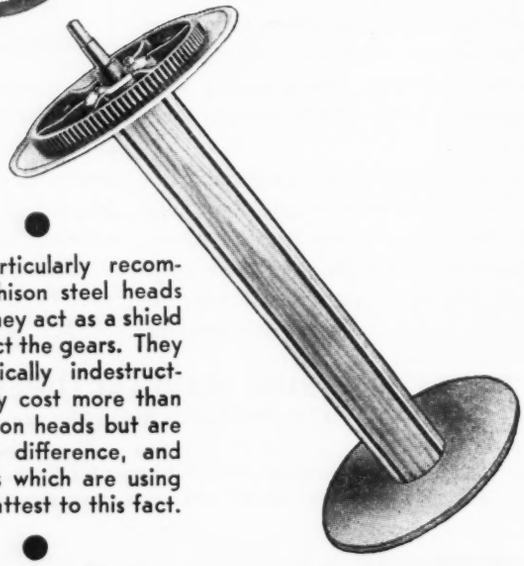
The barrels of West Point beams are made of thoroughly seasoned wood and the journals are of tough plow steel. All are turned to exact size and length. Our beam barrels may be fitted with either our high tensile strength cast iron or Etchison patented steel heads.



Your PROBLEM

If you have a production problem whereby special machinery or parts are needed, let your problem become our prob!em. We would make suggestions or furnish designs by our own engineering department. Or we can make anything special from your own design.

Our foundry and machine shop is ably equipped to make anything large or small, simple or intricate, in the way of textile machinery repair parts, gears, cloth room machinery or other special machinery. A number of mills have used our made-to-order service, and we have produced or perfected special machinery exclusively for those mills. Let us help you solve your problems and make special equipment for you.



●

We particularly recommend Etchison steel heads because they act as a shield and protect the gears. They are practically indestructible. They cost more than the cast iron heads but are worth the difference, and those mills which are using them will attest to this fact.

●

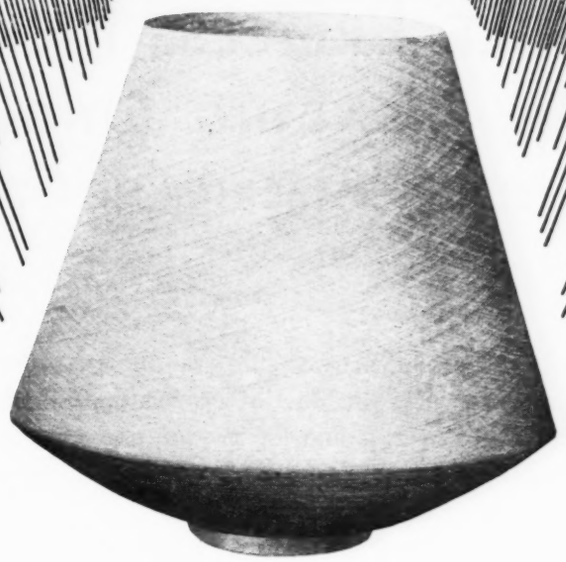
Let us furnish you with more information about West Point Loom Beams

WEST POINT FOUNDRY & MACHINE CO.

(Batson-Cook Company, Owners)

WEST POINT, GEORGIA

YOUR REPUTATION



CONE WINDING MAKES IT OR BREAKS IT

A reputation for quality is any spinner's biggest business asset. If YOU have such an asset, guard it well. If there is room for improvement in your case, it is none too soon to start NOW.

Whether your problem is to maintain or attain a reputation for quality, the Foster Model 102 Cone Winder can help you; for being the *last* process, cone winding is perhaps the most important operation in the mill.

The *appearance* of your cones determines a knitter's first impression, and first impressions, good or bad, are lasting. The *performance* of your cones on the knitting machine is your last chance to create future business.

FOSTER MODEL 102

The Foster Model 102, properly adjusted and properly operated, practically guarantees both proper appearance of your cones and their proper performance on the knitting machine; and this at minimum cost to you. It retains all time proven features of older Foster models and offers important improvements, such as 100 percent increase in production, more delicate manipulation of the yarn, additional slub catching and exact lay of the coils on the cone surface to reduce variation in tension at the knitting machine. In short, it makes Foster Cones, more than ever before, "standard for the knitting trade."

FOSTER MACHINE CO.
Westfield, Mass.
Fred P. Brooks, Representative
P. O. Box 941, Atlanta, Ga.

Standard for the Knitting Trade

ALDRICH SYNCHRONIZED SINGLE PROCESS PICKING

IS STILL THE LEADING SINGLE PROCESS SYSTEM IN USE IN AMERICAN COTTON MILLS.

The patented Aldrich Synchronizer turns out better laps because it controls the flow of cotton through the whole picker without overloading the evener, and without making it necessary to use a hopper or gauge box between the breaker and finisher sections.

With old style two and three process picking, good breaker laps made better finished work than poor breaker laps.

With new style single process picking the same thing is true.

The Aldrich System is a continuous process in which the lap is made evener and smoother by each successive beater and screen section in the picker.

The Aldrich System does not tear up the breaker lap and then make another breaker lap for the cards.

The Aldrich System makes the best possible finished lap out of the best possible breaker lap.

It can not only be applied to two and three process pickers, but to other types of less efficient single process machines.

AldricH MachinE

Greenwood, **WorkS** South Carolina

CONTROL

Perfect balance and control, so necessary in many things, are vitally necessary in the manufacture of quality starch. With hair-breadth accuracy such factors as fluidity are controlled in the manufacture of STALEY STARCHES.

Everything in the STALEY plant is electrically controlled and starch is never touched by human hands. Control of quality and uniformity, to an extent unheard of before, is constantly maintained. And all of this is watched over every minute through scientific testing by highly trained experts in Staley's modern laboratories.

Such perfect control assures you starch quality and uniformity—assures you time and labor saved in preparing more efficient, slow congealing size mixtures—assures you the perfect penetration, adhesiveness and elasticity you want at your slashers—and finally an unvarying, non-shedding warp yarn with flexible strength that weaves smoothly with less loom stoppages and no chafing.

A. E. STALEY MFG. CO., DECATUR, ILL.

Atlanta	Dallas	Chicago	New York
Spartanburg	Philadelphia	Boston	San Francisco

STALEY

STARCHES

WILLCOX & GIBBS LOCKSTITCH MACHINE FOR FINE SINGLE NEEDLE STITCHING.

FINE STITCHING IS THE HALL MARK OF FINE GARMENTS

That the beauty and smoothness of stitching is of paramount importance in the make up of beautiful garments has long been recognized by leading manufacturers and in great part accounts for their standardizing on the Willcox & Gibbs Lockstitch Machine. The use of this machine is not alone confined to the fine apparel field for in virtually every industry and operation requiring a single needle lockstitch machine its many qualities have won it an enviable place. Its speed—top oiling—rotary drive—visible stitch index—economical maintenance and simple adjustments are but a few of its many outstanding features. Test its performance on your own work in your own plant.

WILLCOX & GIBBS SEWING MACHINE COMPANY

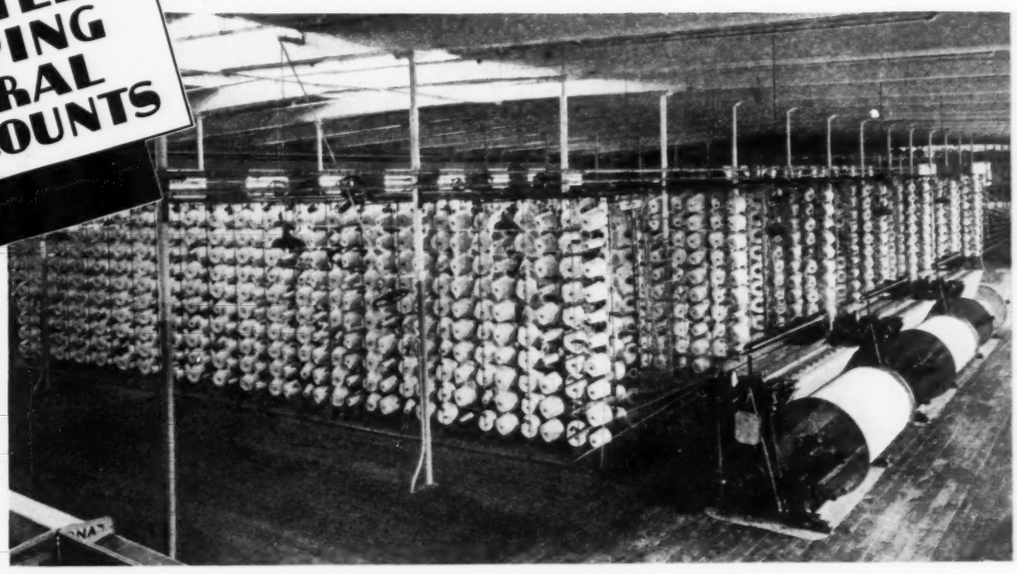
HOME OFFICE: 656-658 BROADWAY --- NEW YORK, N. Y.

MANUFACTURERS AND DISTRIBUTORS OF WILLCOX & GIBBS AND METROPOLITAN SEWING MACHINES

EUROPEAN REPRESENTATIVES

WILLCOX & GIBBS SEWING MACHINE CO., LTD. 20, FORE STREET, LONDON, E. C. 2, ENGLAND

FOR MILLS WARPING SEVERAL YARN COUNTS



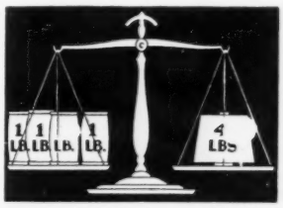
EXTRA CONE HOLDER FOR EACH WARPING END ALLOWS LOADING ONE YARN COUNT WHILE ANOTHER IS RUNNING

The Universal High Speed Warping Creel is now being used by mills warping several yarn counts.

TWISTING OVER -- NO KNOTS

The extra cone holder is loaded with one yarn count while another is running. When changing counts, the warper tender helps the creeler. The old cone is swung out, and the yarn broken and **twisted over** to the waiting cone, which is then swung into place. No knot-tying is necessary.

Then, the ends are pulled through the expansion comb and drop wires, and the warper is ready to run. The creeler is now free to unload the old cones while the warper is running.



75 percent Saving in Creeling

SAVING ON LARGE ORDERS

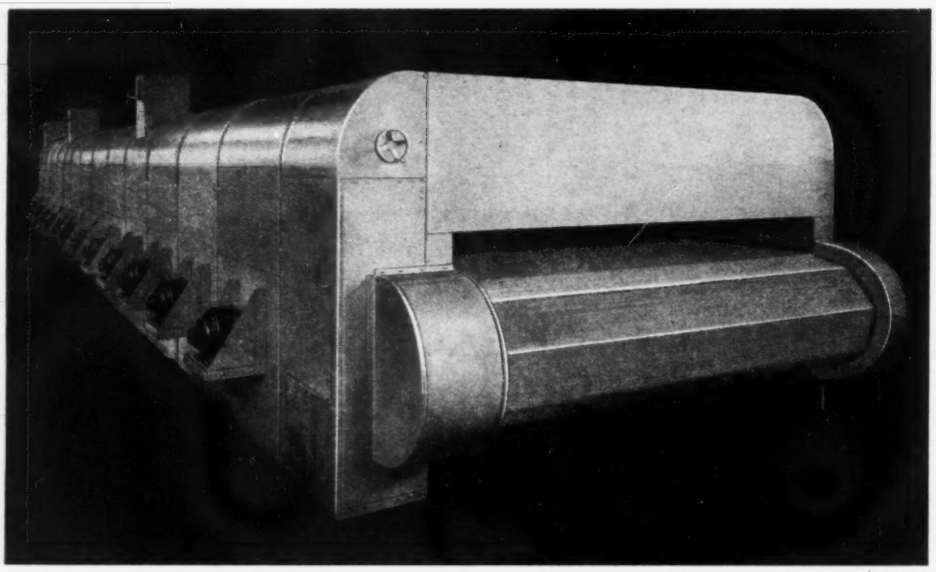
The four - pound Universal cone holds enough yarn for three or more beams without creeling. When an order calls for more than this, the creel is used to magazine, or tie over, another set of cones of the same yarn count without stopping the warper for creeling.

SAVING in CHANGE-OVER TIME

When there are enough cones in the creel to complete the order and the yarn count must again be changed, the creeler loads the reserve cone holders with the next yarn count, while the warper is still running. This reduces the lost time for creeling. Since many beams are produced **without any stops for creeling,** the average time lost, in respect to each beam, is small.

IN 3 OUT OF 4 MILLS MORE NET RETURN
Universal System of High Speed Coning and Warping
UNIVERSAL WINDING COMPANY
BOSTON
NEW YORK · PHILADELPHIA · PROVIDENCE · SPRINGFIELD · UTICA · CHARLOTTE · ATLANTA
2522

Modern Drying Equipment



One Apron Stock Dryer

NEWEST DESIGN

A leader in its field. This Sargent Stock Dryer has proven its worth to many satisfied users. This general acceptance by owners can be attributed only to the superiority of design, materials and workmanship so characteristic of these machines.

FEATURES:

Centrifugal fans, direct motor connected, New type coils, Sectional Conveyor with speed control.

--NEW PATENTED CURVED TOP--

reduces air resistance—promotes free air flow.

SARGENT PRODUCTS

Acidifying Machine—Automatic Extractor—Automatic Feeders—Backwashers — Backwash Dryers — Bagging Machines—Ball Winder—Carbonizing Dryers — Cloth Dryers — Carbonizing Dusters—Cotton Stock Dryers — Crush Roll Machines — Press Roll Machines — Single Apron Dryer—Skein Dryer—Special Dryers — Wool Dryers — Wool Washers — Yarn Conditioners — Yarn Scouring Machines.

C. G. SARGENT'S SONS CORPORATION

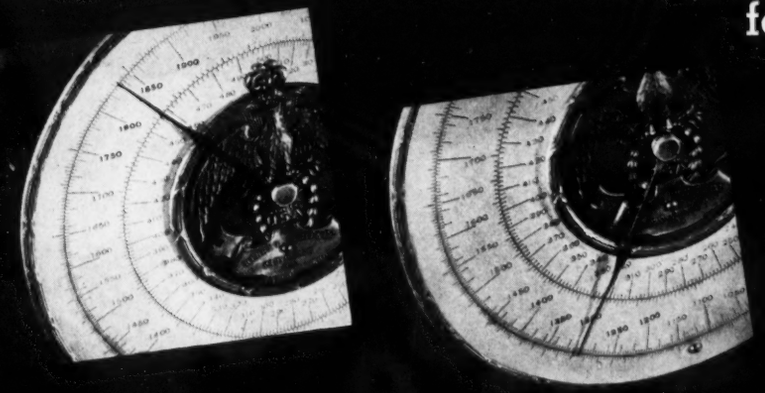
Graniteville, Mass.—Founded 1852

Southern Agents:
Fred H. White, Charlotte, N. C.
Fred P. Brooks, Atlanta, Ga.

Philadelphia Agent:
F. E. Wasson,
Drexel Bldg.

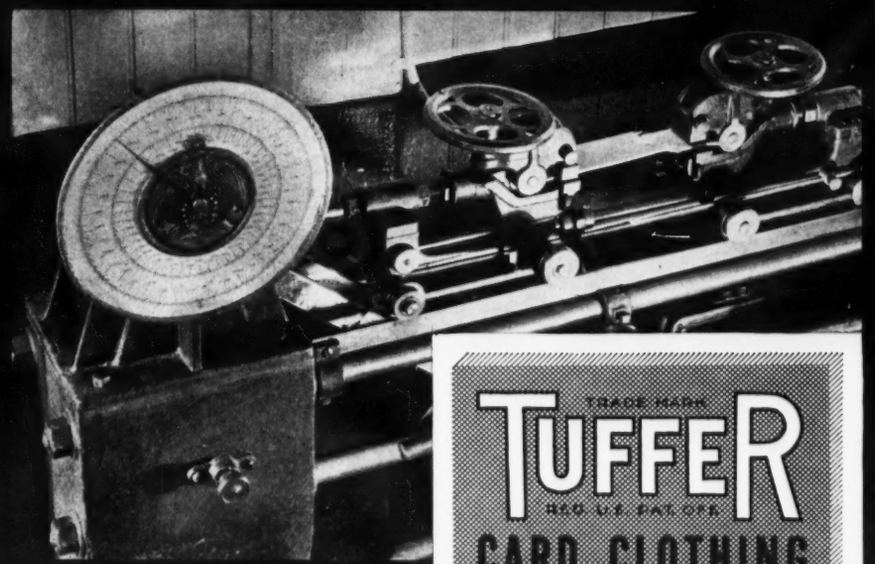
SARGENT IS THE PIONEER AMERICAN BUILDER OF DRYERS

TUFFER Foundation is tested to withstand a strain of 1800 pounds before setting and a strain of 1300 pounds when foundation is set with teeth



When TUFFER Card Clothing is working on your machines the severest pulling strain seldom exceeds 350 pounds. Tests show TUFFER Foundation to be several times necessary strength.

In operation TUFFER Card Clothing keeps its efficient points longer, because the wire is held in our own patented foundation, which is "cushioned" just right to make the wire shock proof to the constant hammering of the various stocks carded.



The patented construction of TUFFER Foundation and exacting care exercised by conscientious and capable card clothing craftsmen result in lower carding costs for you. Make sure you have the proper card for your particular work. We can help you specify.

A boss carder, on the job for thirty years, says: **"I have used many makes of card clothing, but I have not found anything that could take the place of TUFFER."**

TRADE MARK
TUFFER
REG. U.S. PAT. OFF.
CARD CLOTHING

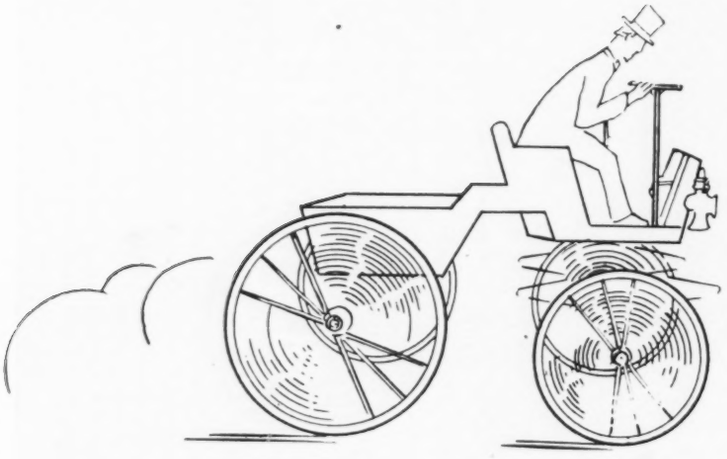
HOWARD BROS. MFG. CO.

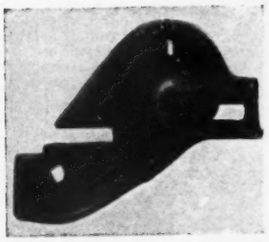
HOME OFFICE AND FACTORY: WORCESTER, MASS.

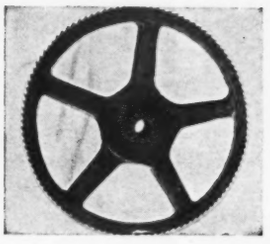
Southern Plant: 244 Forsythe St., Atlanta **Branch Offices:** Philadelphia, Dallas

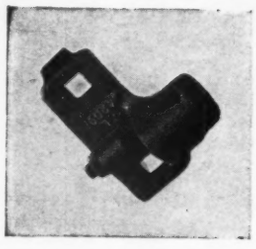
Products: Fillets for Feed Rolls, Lickerins, Tumblers, Strippers, Workers, Doffers, Fancies, and Cylinders, Doffer Rings, Napper Clothing, Strickles, Emery Fillets, Burnisher Fillets, Top Flats Recovered and extra sets loaned, Lickerins and Garnett Cylinders from 4 to 30 inches and Metallic Card Breasts Rewired at Southern Plant. Midgley Patented Hand Stripping Cards, Howard's Special Hand Stripping Cards and Inserted Eye and Regular Wire Heddles

MODERNIZATION









You wouldn't expect the old "motor buggy" of years ago to operate as smoothly and efficiently as today's modern motor car. BUT, if you put modern, close fitting, efficient *parts* in the old buggy, it would go further and faster than it ever did.

Today's modernization of textile mill machinery is as much a matter of PARTS as of machine. No textile machine can operate efficiently if parts are worn, do not fit perfectly or break easily.

HENDERSON TEXTILE REPAIR PARTS are helping many textile mills to modernize their machinery. These strong, efficient parts are made to fit so perfectly and operate so smoothly that even the oldest machinery can be made more efficient by their use.

This kind of modernization saves much in the cost of new equipment and will pay dividends in less stoppage for repairs and decreased maintenance costs.

Let HENDERSON help you modernize your present equipment. Pick out the most troublesome parts and let us supply a replacement. We are sure it will fit perfectly and make the machine operate more efficiently.

HENDERSON FOUNDRY & MACHINE WORKS, HAMPTON, GA.

HENDERSON
TEXTILE REPAIR PARTS

TAKE A GOOD LOOK AT WHAT YOU DON'T SEE!

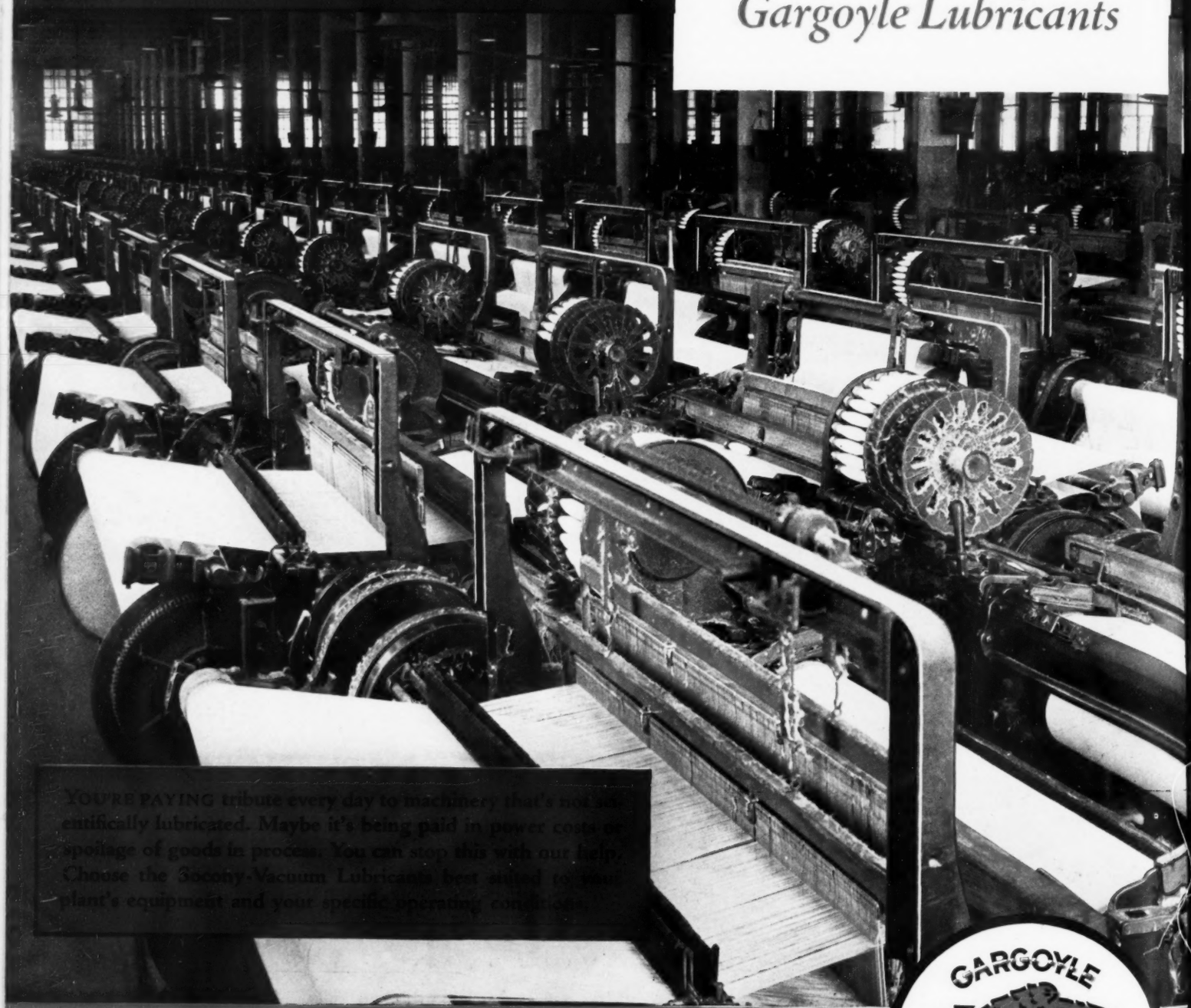
"FRICTION FLAMES"—generally burn unseen! But the way they damage expensive machinery, plant efficiency, economical operation, is always measured in dollars lost. When the Socony-Vacuum Representative calls at your plant, let him help you detect the places where friction is burning up your money. Remember . . . he brings you 70 years of experience—an exclusive asset backing up quality products of unvarying uniformity. Your men will find Socony-Vacuum's cooperation helpful in their daily work.

A Valuable Idea For You On The Next Page

CORRECT LUBRICATION WILL SNUFF OUT THE LOSSES THAT BURN UP PROFITS

HERE'S A PROCESS TAX YOU CAN AVOID!

"Our Spoilage Rates Reduced" say well-known Textile Mills standardizing on Socony-Vacuum's Gargoyle Lubricants



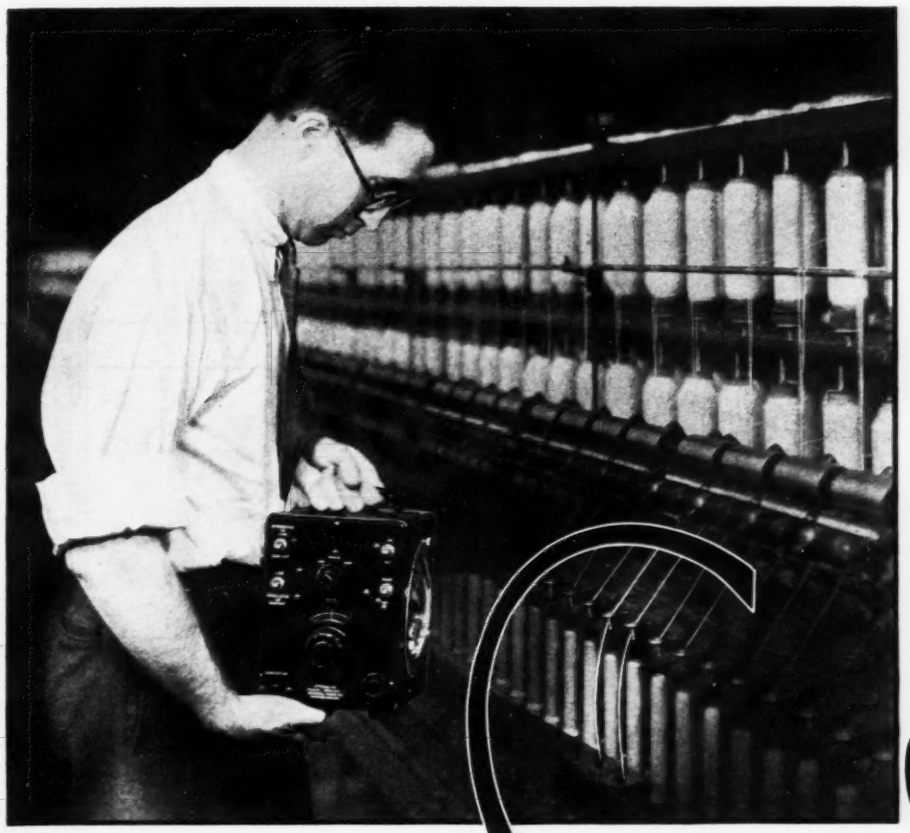
YOU'RE PAYING tribute every day to machinery that's not scientifically lubricated. Maybe it's being paid in power costs or spoilage of goods in process. You can stop this with our help. Choose the Socony-Vacuum Lubricants best suited to your plant's equipment and your specific operating conditions.

GARGOYLE

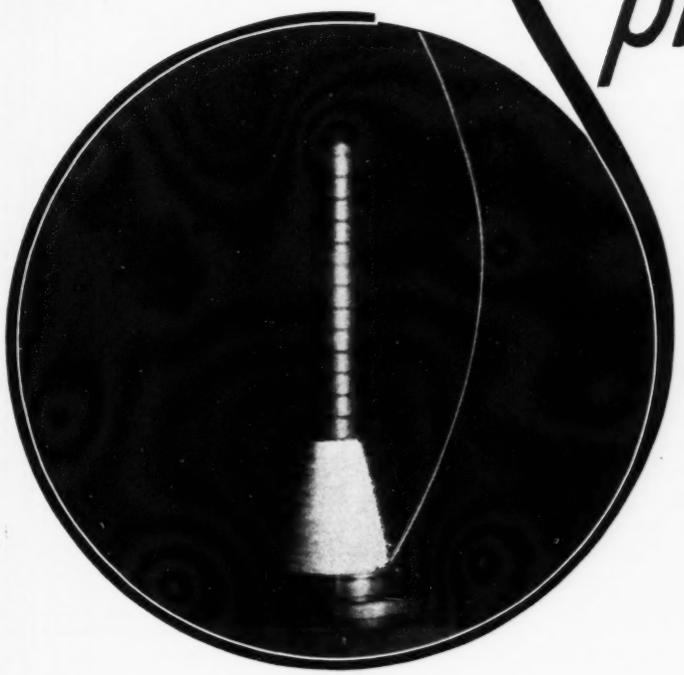
Lubricants

SOCONY-VACUUM OIL CO.
INCORPORATED

STANDARD OIL OF NEW YORK DIVISION · WHITE STAR DIVISION · LUBRITE DIVISION · WHITE EAGLE DIVISION
WADHAMS OIL COMPANY · MAGNOLIA PETROLEUM COMPANY · GENERAL PETROLEUM CORPORATION OF CALIFORNIA



CHECKING *pindle speeds*



AND OBSERVING UNIFORMITY OF TRAVELER MOTION are done easily, quickly and accurately with the new STROBOTAC. Just direct the beam of light at a spindle and turn the speed dial until the spindle or traveler appears stationary. The correct speed is then read directly on the dial. Other spindles can be adjusted very accurately to the speed of the first one. If the dial is set slightly off correct speed, the traveler appears to rotate very slowly so that its motion can be studied.

The STROBOTAC requires no contact with the spindles or frames. Its dial reads rpm directly with an accuracy of 2% from 600 to 14,000 rpm. It weighs only 12 pounds, is completely self-contained and operates from any 115-volt 60-cycle a-c main.

The STROBOTAC is priced at only $95.00.

Write for Bulletin C-N for Complete Details

GENERAL RADIO

Cambridge Massachusetts

The Trend is Definitely Back To Leather —for Cotton Spinning

A recent tour of the Cotton Spinning Industry discloses the fact that thousands upon thousands of spindles after a year or so's spree on Leather Substitutes are getting back onto Leather. In Mills and Public Roller Shops everywhere one sees them cutting off the substitutes and recovering with leather.

You ask why? The answer is easy. It is because the Substitutes will not spin good yarn consistently.

No money saved in Roller Covering can offset the extra attention the Substitutes need, or can pay for the damaged yarn that can be spun in a single hour. That is the answer.

GILLEATHER

SHEEP OR CALF

For Dependability and True Economy
Cover your Rolls with GILLEATHER!

GILL LEATHER COMPANY, SALEM, MASS.

Southern Representatives:

Gastonia, N. C., W. G. Hamner. *Griffin, Ga., Belton C. Plowden.*
Greenville, S. C., Ralph Gossett. *Greenville, S. C., W. J. Moore.*
Dallas, Texas, Russell A. Singleton.

Air pockets in your spinning room make PROFITS TAKE A DIVE!

Open windows in the spinning and weaving rooms lower humidity and cause local drafts, "air pockets," spotty conditions. And this is followed by ends-down, seconds, increased production costs, lost profits.

The Parks Automatic Airchanger, on the other hand, circulates air *evenly* throughout the rooms and maintains uniform humidity conditions with maximum air-change at all times . . . winter and summer. And by so doing, it improves quality and rate of output. It lowers excessive summertime temperatures and improves the morale and efficiency of workers.

The Parks Automatic Airchanger is designed to utilize and supplement your existing system. No adequate equipment need be scrapped. And the reasonable investment required is returned in savings. Send today for Bulletin 234 which gives complete details. Or check the line on the coupon that will bring a Parks engineer to explain the Airchanger's advantages to you.

PARKS-CRAMER CO., FITCHBURG, MASS . . . CHARLOTTE, N. C.

PARKS *Certified* CLIMATE

Gentlemen: Please send me bulletins on Parks Automatic Airchangers ☐ You may have an engineer call ☐ (Please check)

Name .....

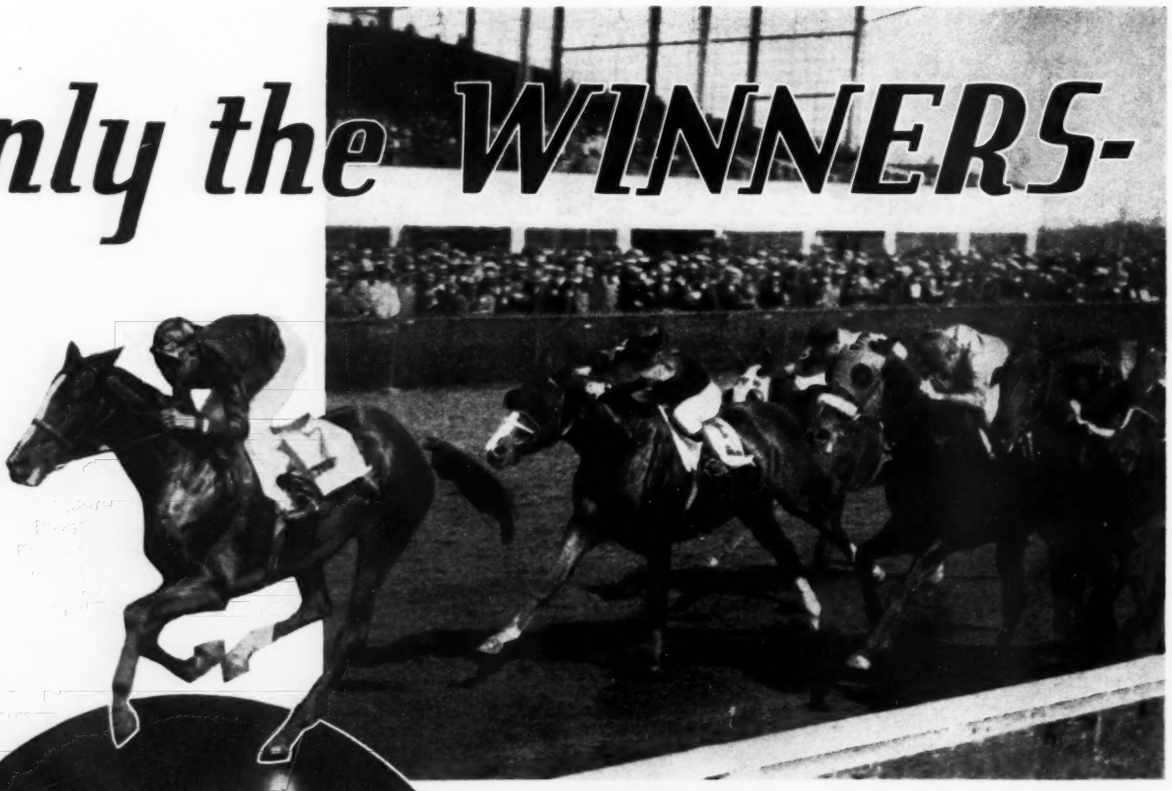
Company .....

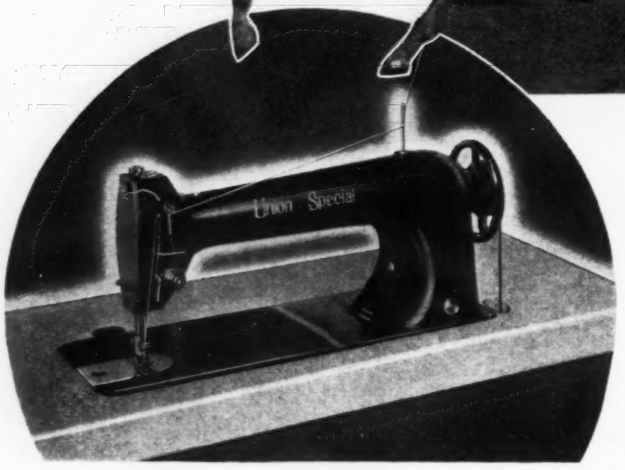
Address .....

City ..... *State* .....

2202

Only the WINNERS-





THE LOCKSTITCH

Repay Their Cost!

ENTERING a "second best" sewing machine in the race to produce quality goods at minimum cost can easily be just as expensive as maintaining a stable full of "non-winning" race horses. That's why more and more manufacturers in the needle trades are getting rid of their less-efficient units and are standardizing on the new Union Special LOCKSTITCH. As a result, they are now enjoying not only record-breaking production but a uniformity of quality never before possible at these high operating speeds.

World's Largest Exclusive Builders of Industrial Sewing Machines

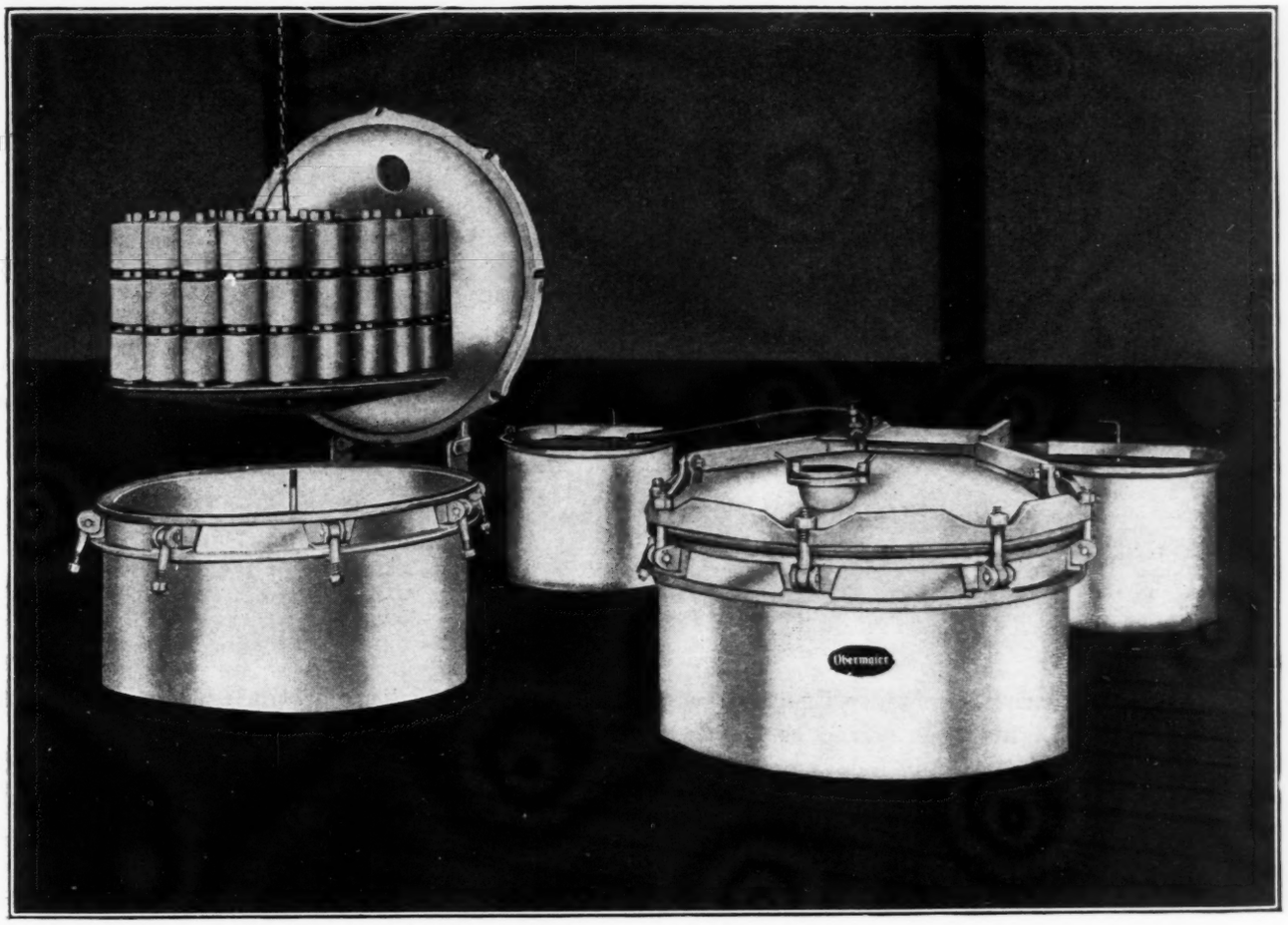
Let us show you why the new Union Special LOCKSTITCH is an investment that pays for itself—often in less time than you would ever believe possible!

UNION SPECIAL MACHINE CO.

400 NORTH FRANKLIN STREET CHICAGO, ILLINOIS

Obermaier

NOW MANUFACTURED IN U. S. A.



The above illustration represents an installation recently made in

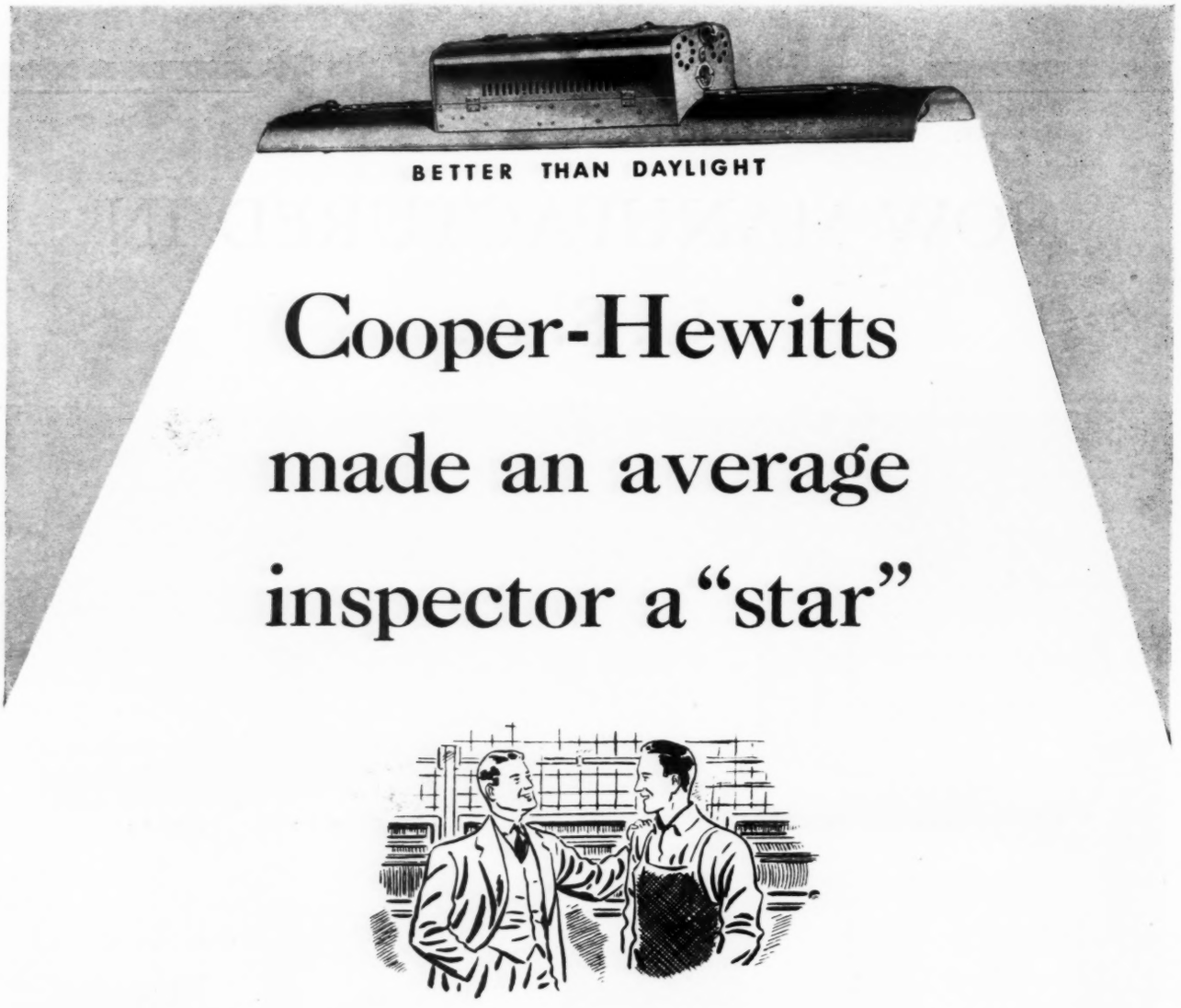
ALL STAINLESS STEEL

MANY NEW PATENTED FEATURES!

PLEASE INVESTIGATE

AMERICAN OBERMAIER CORPORATION

11-20 FORTY-NINTH AVENUE **LONG ISLAND CITY, N. Y.**



Cooper-Hewitts made an average inspector a "star"

An inspector, re-examining under Cooper-Hewitt Mercury Vapor Light goods passed as "perfect" under other light, found many hidden defects that had escaped previous notice. For a short time this inspector enjoyed an advantage over his fellow workers. But when this mill installed the detail-revealing Cooper-Hewitts in the weave room, fuzzy yarn caused by rough drop eyes, and heddles; slugs in yarn, and oil spots on warp were all caught while the cloth was still on the loom.

The Cooper-Hewitt Mercury Vapor system provides lighting *quality* that reduces spoilage and labor turnover. Workmen operate during their entire shift without fatigue from eye-strain, for detail stands clearly revealed—even in the shadows. More economical production and full efficiency is maintained day or night.

Fewer rejects and less time lost on repairs mean more profits to management. A test is the most convincing proof. Write to the General Electric Vapor Lamp Company, 853 Adams Street, Hoboken, New Jersey.

GENERAL ELECTRIC VAPOR LAMP COMPANY

684

COOPER-HEWITT MERCURY VAPOR LIGHT

ABINGTON

MODERNIZE

WITH

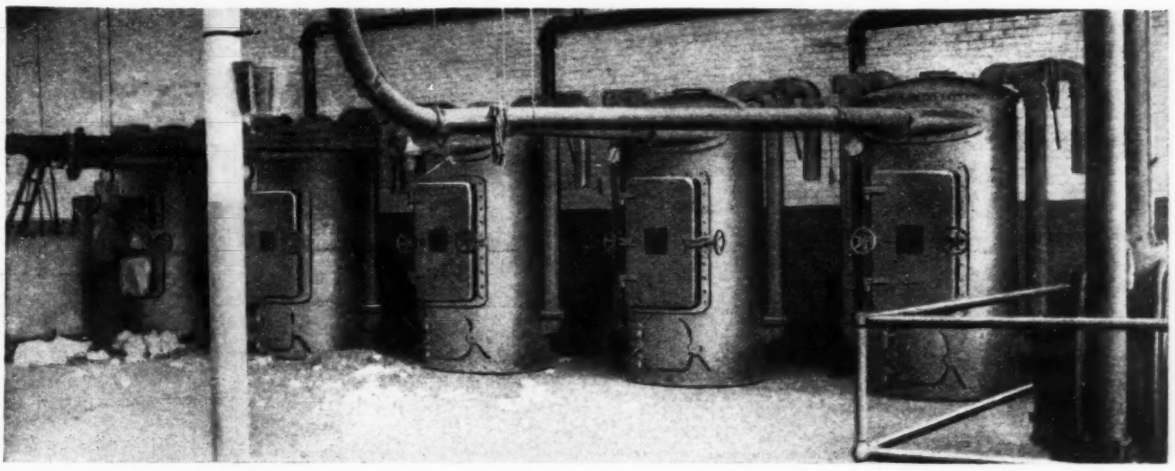
COOK-GOLDSMITH

VACUUM CARD STRIPPING

AND

WASTE COLLECTING SYSTEM

ABINGTON



THIS WASTE HOUSE IN A LARGE SOUTHERN MILL, EQUIPPED WITH FIVE ABINGTON VACUUM RECEIVERS, HANDLES SEVEN DIFFERENT KINDS OF COTTON WASTE DAILY

Vacuum Stripping Reduces Number of Grindings
Increases Card Output About 4%
Absence of Metal Contact Preserves Card Wire
One Man Can Strip 675 Cards Once a Day
Same Equipment Collects All Kinds of Process Waste
Cleaner Cards and Card Room

50,000 CARDS ALREADY EQUIPPED WITH THIS STRIPPER.

ABINGTON CIRCULATING

BLEACHING, DYEING AND DRYING SYSTEM

CAST IRON, NICKEL ALLOY OR STAINLESS STEEL KIERS

PERFORATED DYEING BEAMS AND PERFORATED TUBES FOR YARNS AND ROVING DYEING

Abington Automatic Weaver's Knotters

FOR

ALL CLASSES OF YARNS

ABINGTON TEXTILE MACHINERY WORKS

19 CONGRESS ST.
BOSTON, MASS.

FRED H. WHITE
GEN. MGR.

MCKINNON BL'D'G.
CHARLOTTE, N. C.

LIGHTING WITH G·E·MAZDA LAMPS
IS ECONOMICAL LIGHTING

...they stay brighter longer!

LOOK FOR THIS MARK

IT is a scientific fact that lamps marked with the GE monogram stay brighter longer than so-called cheap lamps. 480 checks and inspections guard against the imperfections in manufacture found in poor lamps—imperfections resulting in dollars wasted for current which is not converted into light.

General Electric's research and development have resulted in lamps of greatly improved efficiency and lower price. In the interest of better, more efficient work, as well as in the interest of increasing production and reducing spoilage in your plant, you should use lamps that *stay brighter longer*. For good light at low cost—for sight-saving light—buy lamps with the mark GE.

GENERAL ELECTRIC

MAZDA LAMPS

General Electric manufactures lamps for home lighting and decoration, automobiles, flashlights, photography, stores, offices and factories, street lighting and signs. Also Sunlight lamps.

TRAIL BLAZING ISN'T ALWAYS DONE WITH AN AX

IT was the custom of American pioneers, when exploring new territory, to "blaze a trail," so that others might follow with assurance and in comparative safety. This blazing was done by stripping the bark from trees along the way.

There are still trails to be blazed in America, but they are in industry rather than in virgin forest. In the card clothing industry the name Ashworth has been a trail blazer for three generations. In fact, card clothing has become a tradition to this company—not just a product.

One of the originators of this business was also the originator of hardened and tempered steel wire for card clothing and later of BRIGHT hardened and tempered steel wire. Because of its obvious advantages, this wire is now standard for the entire trade.

Additional improvements from time to time, in product, organization and service, have made this company one of the leaders in its field. The principles of management that have been responsible for past achievements still prevail in this company today. We are still blazing trails that purchasers of card clothing may follow, confident of progress with safety.

NOTE: Other Ashworth contributions to card clothing progress will be described in future advertisements.

Ashworth
PIONEERS IN CARD CLOTHING

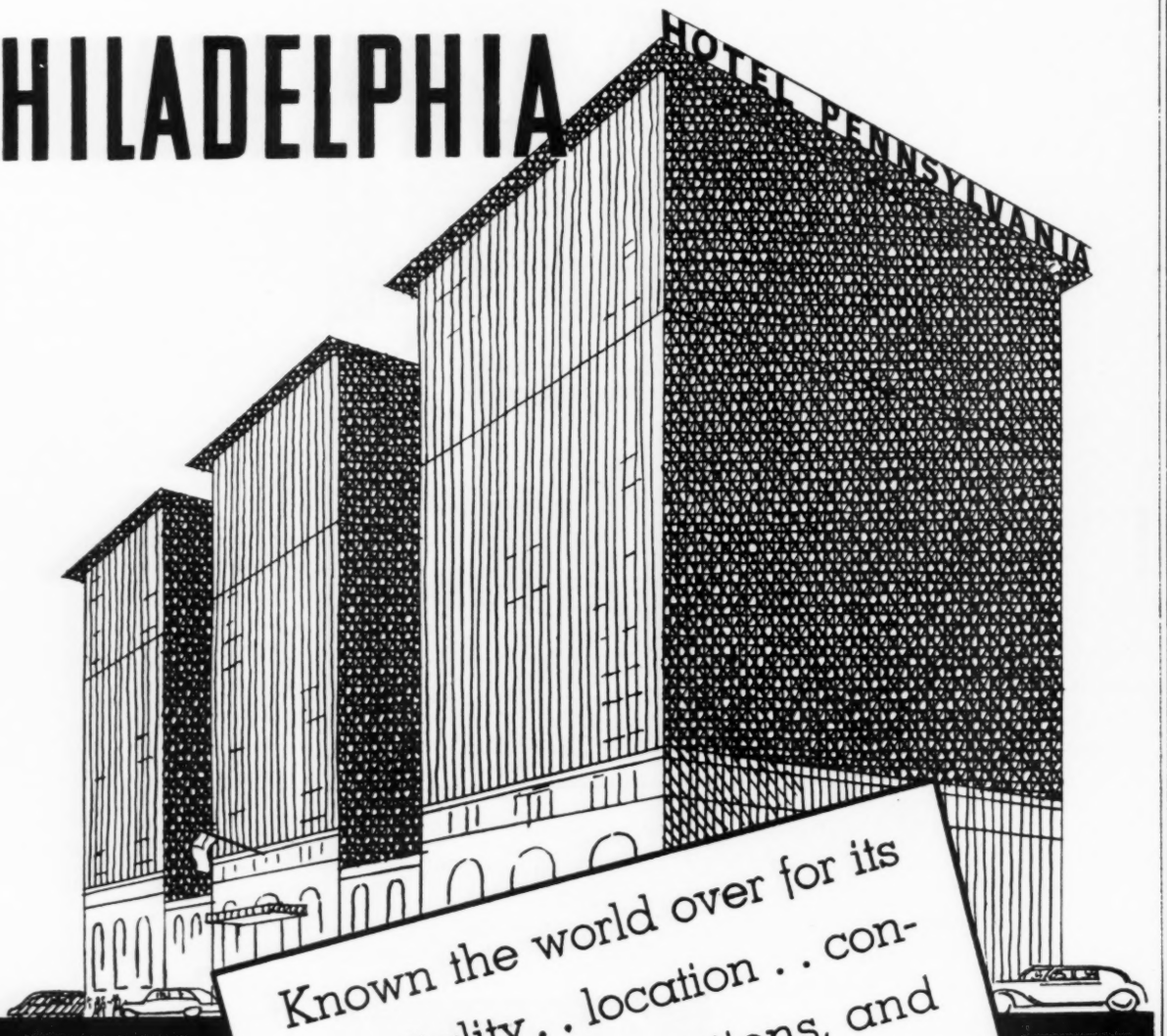
ASHWORTH BROS., INCORPORATED
WOOLEN DIV: AMERICAN CARD CLOTHING CO.

Factories in Fall River, Worcester and Philadelphia.

Sales Offices and Repair Shops in Charlotte, Atlanta and Greenville.
Southwestern Representative: Textile Supply Co., Dallas, Tex.

PRODUCTS AND SERVICES ● Card Clothing for Cotton, Wool, Worsted, Silk and Asbestos Cards and for All Types of Napping Machinery; Brusher Clothing and Card Clothing for Special Purposes; Lickerin Wire and Garnet Wire; Sole Distributors for Platt's Metallic Wire; Lickerins Rewired and Top Flats Reclothed at All Plants.

PHILADELPHIA



Known the world over for its hospitality . . location . . convenient to all stations, and only 10 minutes to the business section . . unlimited parking.

600 ROOMS
WITH BATH
$2.50 UP

HOTEL PENNSYLVANIA

39TH & CHESTNUT STREETS · PHILADELPHIA

Kaumagraph protects product package identity

The Finest Stores feature merchandise marked with K·D·T's

Visit a hat store and you'll find high-grade hats marked with kdt's. Examine gloves and you'll see kdt's. At the first-class furriers you'll find kdt identification on the backs of skins. Look at linens, underwear, hosiery, carpets, fine piece goods of most any material or texture and a good deal of it is protected with Kaumagraph Dry Transfers.

Kaumagraph Dry Transfers can mark any textile product with any design in any one or two colors. Remarkably low in cost, kdt's are decidedly inexpensive to apply by hand or by machine. Ask us how kdt's may be applied to your product for attractive, safe and economical identification.

KAUMAGRAPH, NEW YORK

PLANTS: NEW YORK CITY · PARIS, CANADA · MANCHESTER, ENGLAND

Representatives in Principal Textile Centers of the World

Copyright 1936 by Kaumagraph Co.

THE HOME

that was dedicated 12 years ago to the production OF THE PERFECT ENZYME PRODUCT – ARCY for successfully liquefying ordinary pearl starch

Since its introduction in 1923, ARCY has proven in mill after mill that it is a perfect enzyme product that successfully liquefies any make of ordinary pearl starch.

Of course there are many other kinds of enzymes for converting starch, but time has proven that they have little value in textile mill use in preparing starch sizes, because they carry the conversion into sugars, to the utter destruction of the desirable properties of starch for warp sizing.

ARCY enzymes are amylases, with characteristic properties not found in any other product. The conversion is carried to just the CORRECT degree for maximum sizing value regardless of working conditions or the brand of pearl starch used. The resulting solution is thin, transparent and slow-congealing with the penetrating and binding qualities every mill desires. The better results, in weaving the warps, reduces production costs and the quality, feel and bright clear colors of the finished goods assure a more saleable product.

No extra equipment is required to use ARCY. It is simple, inexpensive and practically fool-proof. An interesting little booklet will be sent gladly on request.

Write today to Drake Corporation, Norfolk, Virginia for your copy.

ARCY

MODERN CALENDERS

ROLLING

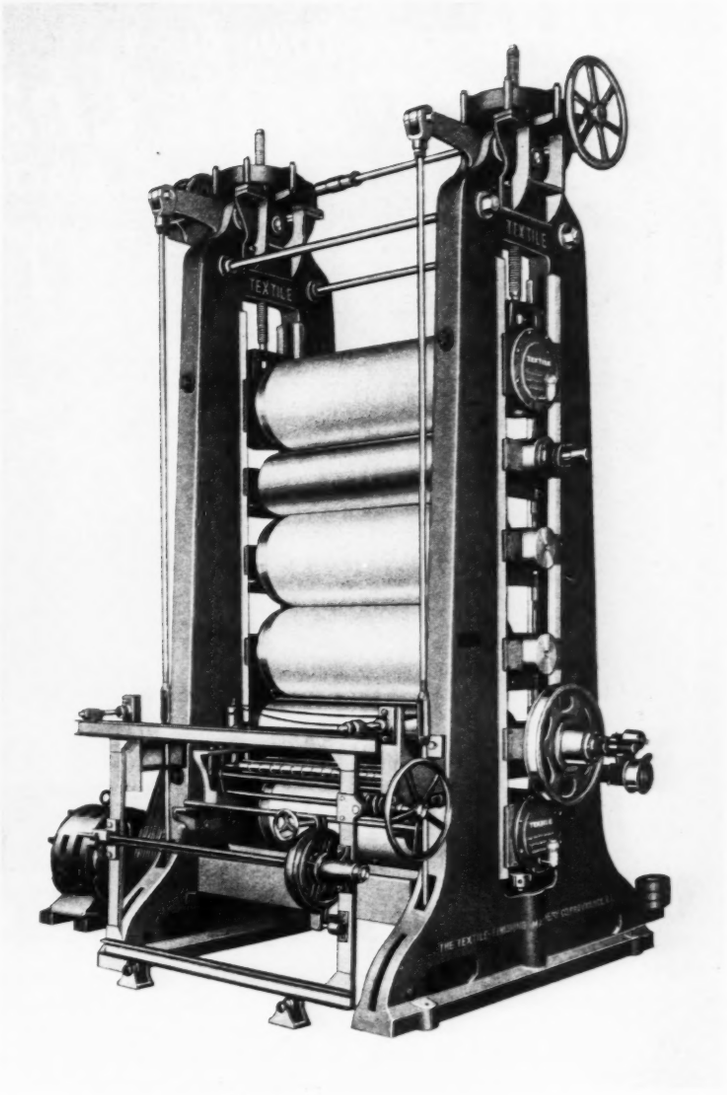
CHASING

FRICTION

EMBOSSING

SCHREINER

Including Hydraulic Installations

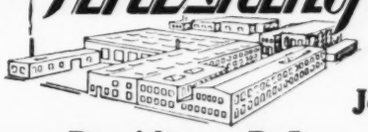


6 Roll Calender with Spherical Roller Bearings

The Calender illustrated is a typical installation built to meet special requirements by certain mills for producing a variety of finishes. The roll arrangement makes it possible to obtain an equal degree of finish on both sides of the fabric with one run or passage through the machine. Other types of finishes are obtainable through different methods of threading the fabric. A still further range of finishes is possible by the addition of Chasing Equipment and Hydraulic Pressure Attachments.

The Textile Finishing Machinery Co.

New York Office
50 Church St.



Southern Office
Johnston Bldg., Charlotte, N. C.

Providence, R. I.

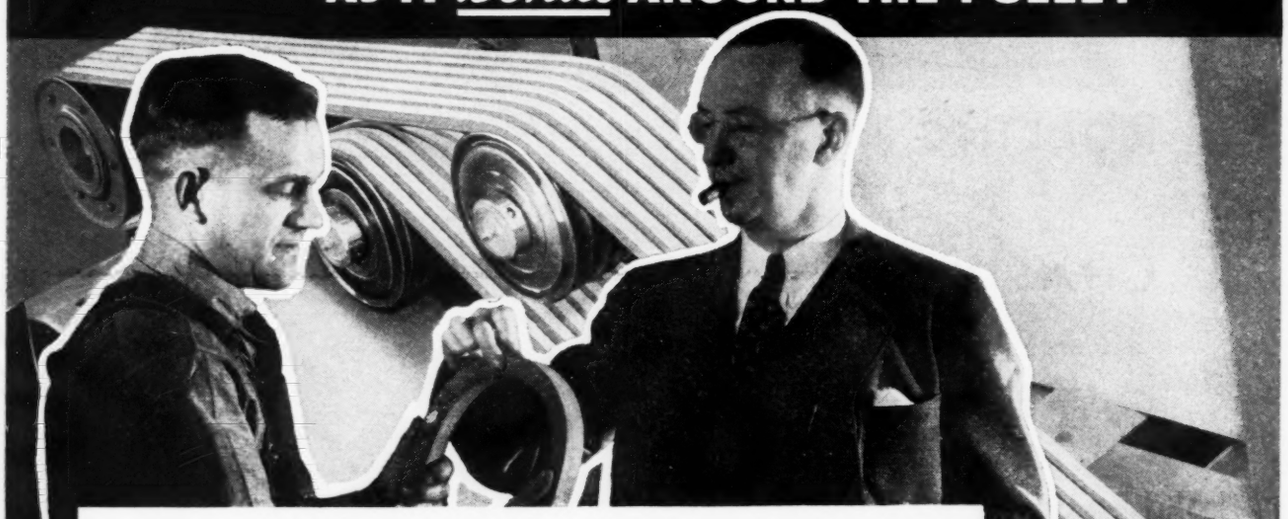
MANUFACTURERS OF MACHINERY FOR

SINGEING, BLEACHING, MERCERIZING, DYEING, DRYING, PRINTING, FINISHING AND SANFORIZING TEXTILE FABRICS

Right Before Your Eyes

EVERY V-BELT Changes SHAPE

AS IT *Bends* AROUND THE PULLEY



That's WHY the

CONCAVE SIDE

is a MONEY SAVER

When *any* V-belt bends, the top is under tension and becomes *narrower.* The bottom, under compression, *widens.* This distorts a *straight*-sided V-belt into a shape that does not fit the sheave groove —as shown in Figure 1, below. Note the out-bulge of the sides.

1 STRAIGHT SIDED BELT

WHAT HAPPENS WHEN A V-BELT **BENDS**

2 BELT WITH PATENTED CONCAVE SIDE

Now look at figure 2. There you see that the *same* shape-change merely *straightens* the concave side. There is *no* side-bulge. This saves money in two ways: **1.** You get *uniform* side-wall wear, *longer* life! **2.** The full side-wall grip on the pulley carries heavier loads without slippage —a real saving in power consumption.

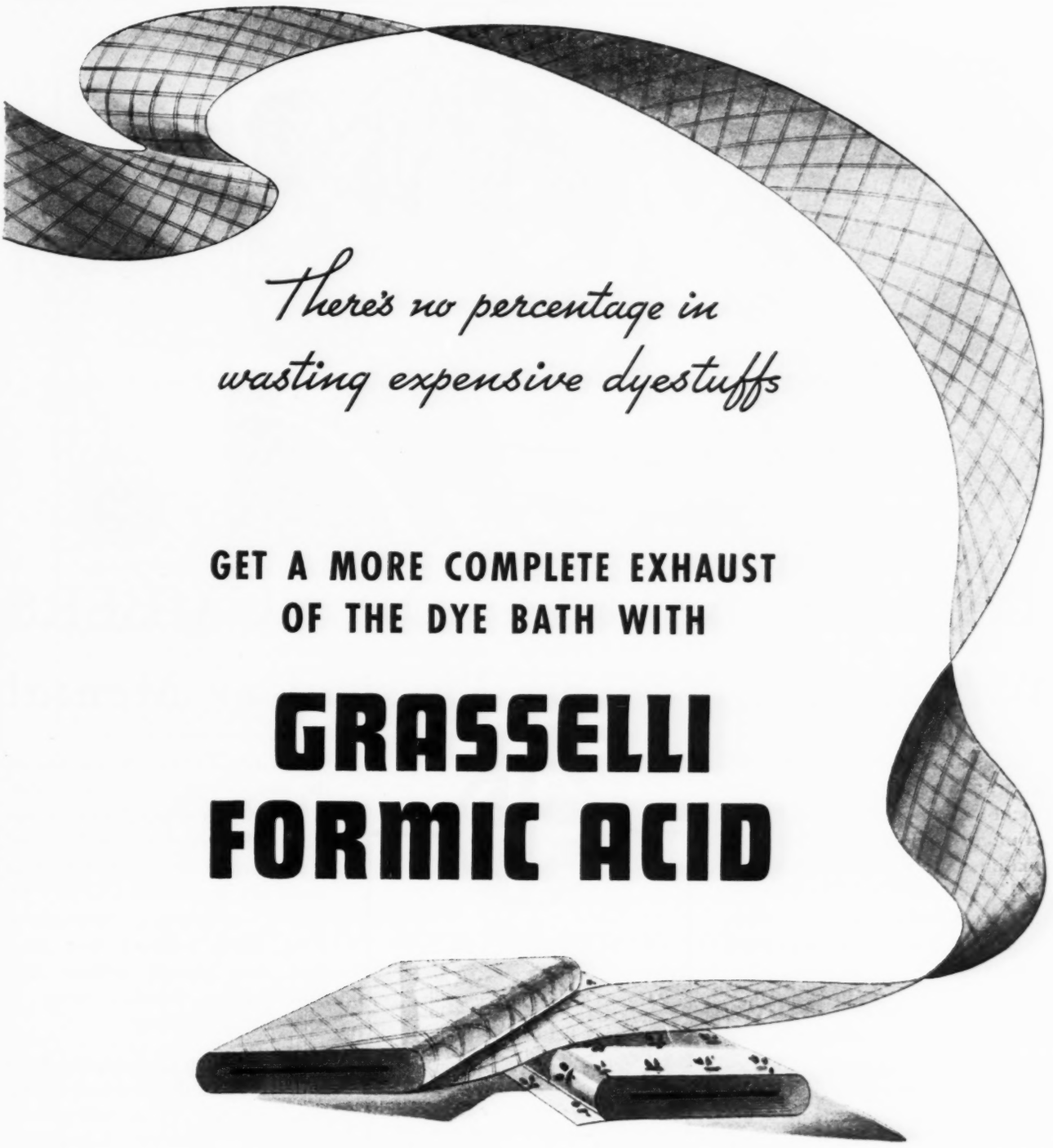
The Gates Vulco Rope Drive is the *only* V-belt built with the patented concave side.

Engineering Offices and Stocks in all Large Industrial Centers

THE GATES RUBBER CO., *Factory Branches*

Terminal Bldg. HOBOKEN, N. J.
1524 So. Western Ave. CHICAGO
747 Warehouse St. LOS ANGELES.
2213 Griffin St. DALLAS
999 So. Broadway DENVER

GATES VULCO ROPE DRIVES



There's no percentage in wasting expensive dyestuffs

GET A MORE COMPLETE EXHAUST OF THE DYE BATH WITH

GRASSELLI FORMIC ACID

One of the most expensive items that go into dyeing operations is the dye itself. Yet how many times has the dye bath been emptied with a goodly portion of expensive dyes going down the drain?

Try Grasselli Formic Acid, 85% and 90%, in your dye bath. It will help stop this loss. Prove for yourself that with the introduction of Grasselli Formic you will get a more complete exhaust of your dye bath. It makes for level dyeing—for better results. Write our nearest branch.

THE GRASSELLI CHEMICAL CO., INC.

Founded 1839 **Cleveland, Ohio**

New York Office and Export Office: 350 Fifth Avenue

Albany	Charlotte	Detroit	New Orleans	St. Louis
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GRASSELLI

Represented in Canada by
CANADIAN INDUSTRIES, LTD.
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DU PONT

THERE'S SAFETY IN NUMBERS

Whether the Need be Physical or Mental

The advantages of qualified man power for physical accomplishment on a large scale are axiomatic. The advantages of qualified brain power, or COLLECTIVE THINKING for mental accomplishment in the business world are not so widely recognized.

The need for COLLECTIVE THINKING in textile processing was never before so great as today. Chemical research and the ever changing demands of fickle Dame Fashion have multiplied a thousandfold the problems of textile processing executives. Furthermore they have less time than ever before in which to solve these problems.

CHEMICALS

Sizing and Finishing Gums and Compounds • Soluble Gums • Softeners • Soluble Oils • Tallow • Waxes • Soaps • Flour • Dextrines • Starches • Pigment Colors and Lakes • Ammonia • Acids • Blue Vitriol • Borax • Bichromate of Soda • Bichromate of Potash • Liquid Chlorine • Chloride of Lime • Caustic Soda (solid and flaked)

COLLECTIVE THINKING of the proper type is not available to most processing executives within the organization, because the average mill or finishing plant can not afford a STAFF of textile processing specialists. What more natural then than that they should utilize A-H Consultation Service, since it costs them nothing?

This service is rendered by a staff of specially trained chemists, assisted by a completely equipped modern laboratory and a company experience of 121 years. Use it to check on the efficiency of routine sizing and finishing operations, as well as on new processing problems.

Arnold, Hoffman & Co., Inc.

Established 1815. Plant at Dighton, Mass.

PROVIDENCE, R. I.

New York • Boston • Philadelphia • Charlotte

OVER a broad front of 25 states, Robert and Company has been helping the forward march of industry for 15 years. This map shows two hundred communities in which we have executed some two thousand projects of various types.

ROBERT AND COMPANY
ATLANTA INCORPORATED GEORGIA
Architects and Engineers

IN A SINGLE OPERATION

...REMOVES Starch Waxes and Insoluble Oils

● Desize and boil-off in one operation. Eliminate pre-malting. ● Works best at the boil — May be applied in a jig, open type washer or pressure kier. ● For processing rayon crepe, taffetas, twills, rayon alpaca and all grades of cotton goods. ● The adoption of Diazonol A. C. will increase production and cut costs.

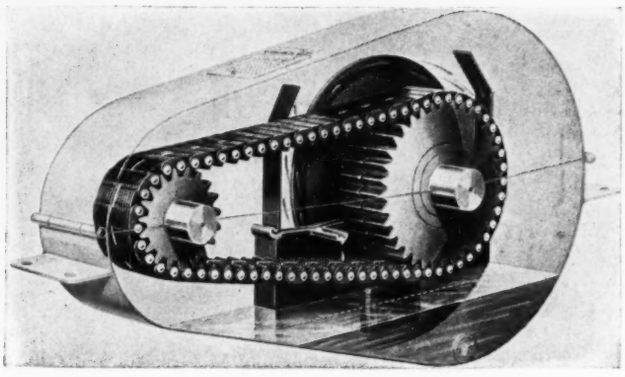
Request Demonstration Now....

DIAZONOL A.C.

ARKANSAS CO. INC

233 BROADWAY NEW YORK

"Always Dependable"



No oil leakage. Link-Belt Tex-Til automatic-lubricating oil-leak-proof casing assures a cool running drive with drop-by-drop lubrication.

LINK-BELT SILVERSTREAK SILENT CHAIN • DRIVE •

REQUIRES PRACTICALLY NO ATTENTION
NO UPKEEP—EASY TO INSTALL

THE "LONG LIFE" DRIVE

•

LINK-BELT POSITIVE DRIVES INCLUDE:

Herringbone Gear Reducers *Worm Gear Reducers* *Motorized Reducers*
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Silent Chain Drives *Catalogs on Request*

5511

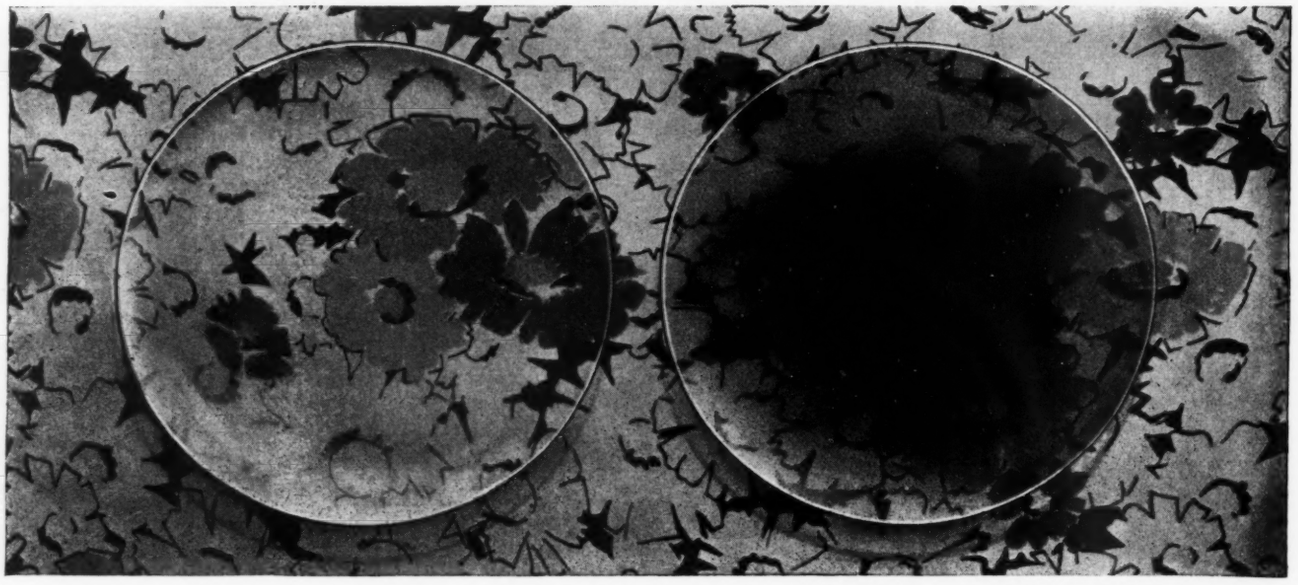
LINK-BELT COMPANY

The Leading Manufacturer of Positive Power Transmitting Equipment

Philadelphia Indianapolis Atlanta Chicago San Francisco Toronto Boston New York Baltimore Dallas New Orleans Offices in Principal Cities

NEW ONYX PRINTING GUM

..practically Water White!



LEFT. Film of Siltex Gum Brilliant E. R., on watch crystal, shows unusual transparency and clarity.

RIGHT. Film of average printing gum, on watch crystal, shows muddying effect on white and colors.

SILTEX GUM BRILLIANT

Patented

Extra Refined

Printers—here's the first really colorless, transparent printing gum! A new process of *Extra Refining*, added to the already superior Siltex Gum Brilliant, further establishes it as the truly perfect printing gum. Mill benefits noted are these:

Being colorless, Siltex Gum Brilliant E. R. produces much purer whites and clearer colors. Pigment whites print snow white. Finest lines and designs reproduce sharply and clearly, on both face and back of cloth.

Mixtures of Siltex Gum Brilliant E. R., with Hydrosulphite, actually become clearer overnight, in contrast with other gums which turn darker.

Siltex Gum Brilliant E. R. is absolutely free of grit, flows smoothly, has excellent penetration. Works equally well on discharge or application work. Washes out easily and thoroughly.

Put this improved printing gum to work in your plant. Write for sample and prove these advantages to your own satisfaction and profit!

Also New Vat Gum!

HYDRO-SULVAT G

Ready for use. Gives more color value; makes smoother paste; has more penetration; no thinning out with alkalies. Prints clearer designs and whiter whites. Easy washing out, leaves goods softer. For all vat dyes. Write for details and sample.

ONYX OIL & CHEMICAL CO.

Specialists on Finishing Materials

JERSEY CITY, N. J.

Southern Repr. E. W. KLUMPH, Charlotte, N. C.

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CLUETT, PEABODY & CO., INC.
TROY, N. Y.
Painted with Save-Lite Gloss

IT TAKES SIGHT TO MAKE SHIRTS

And famous ARROW Shirts are made in an immaculate plant with light and sight aided to the fullest extent by Sherwin-Williams Save-Lite on walls and ceilings.

Sherwin-Williams Save-Lite, a Sherwin-Williams paint engineer, and a sight meter in his hands will be your surest aids to better light and better sight. And better shoes—and sheets (metal or textile)—and saws—and shirts. The Sherwin-Williams Company, Cleveland, Ohio, and all principal cities.

SHERWIN-WILLIAMS SAVE-LITE

SEE THE SHERWIN-WILLIAMS PAINTING ENGINEER

Are YOU Using This
PROTECTION AGAINST REPROCESSING?

EVEN CURDS OF INSOLUBLE SOAPS LIKE THESE . . .
BATH WITHOUT ARCTIC SYNTEX
MAGNIFIED 15 DIAMETERS
ARE COMPLETELY DISPERSED BY ARCTIC SYNTEX
BATH WITH ARCTIC SYNTEX
MAGNIFIED 15 DIAMETERS

YOU know the trouble that can be caused by insoluble soaps in your processing baths—the spotting, off-colors and off-odors that necessitate expensive reprocessing. Yet it is extremely difficult to completely eliminate them, for processing agents, carried from one bath to another in the goods being processed, frequently cause them to form at unexpected times.

When you use Arctic Syntex in your dye baths or immediately prior to your dyeing or finishing operations—you need never worry about the presence of these insoluble scums or curds—for this amazing new product so completely disperses them that they *cannot* attach themselves to your fabrics or yarns. A small quantity in these operations thus gives complete protection against one of the most persistent causes of reprocessing.

This is but one of the many unusual ways in which Arctic Syntex can help you save money in your mill and improve the quality of your output. Why not investigate them *all?* Your Colgate-Palmolive-Peet representative will be glad to give you full information. Or write direct to Colgate, Jersey City, N. J. There's no obligation, of course.

• • •

***ARCTIC SYNTEX,** the most advanced development in fatty acid derivatives, is made in two forms, A and T. Each offers specific advantages in processing of wool, silk, cotton and rayon. Both are stable under usual storage conditions. Both are consistently uniform.

*ARCTIC SYNTEX

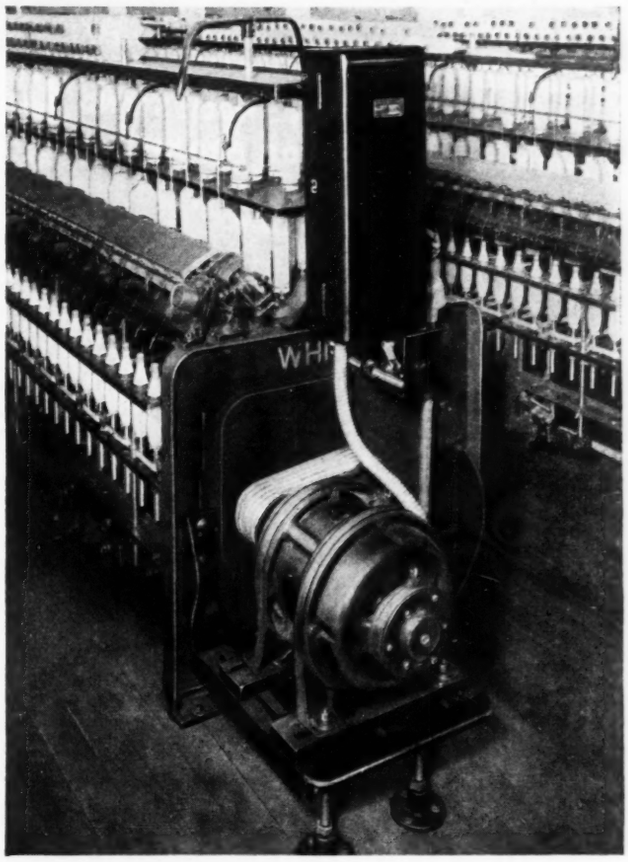
1. May be used without hesitation in acid or alkaline solutions.
2. It is an excellent wetting-out and penetrating agent.
3. Is unaffected by hard water or metallic salts.
4. Prevents the separation of lime soaps and acts to disperse lime soap particles already formed.
5. Shows good scouring action.
6. An excellent emulsifier for oils (Mineral, etc.).
7. Is itself neutral in reaction and is effective in liquors containing no free alkali. Can be used on the most delicate shades and goods.
8. Possesses no felting properties. May be used with fabrics which are spun loosely or of open weave. Is a valuable assistant in fulling, however, because of its penetrative and emulsifying properties.
9. Is stable under ordinary storage conditions.
10. Dissolves readily in water, forming a clear yellowish solution.
11. Has desirable levelling action in dyeing.

ARCTIC SYNTEX

(Latest Development in Fatty Acid Derivatives)

COLGATE-PALMOLIVE-PEET CO. • JERSEY CITY, N. J.

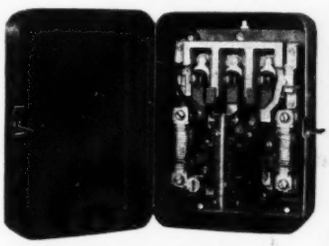
DO YOUR MAGNETIC SWITCHES CAUSE YOU UNNECESSARY EXPENSE?



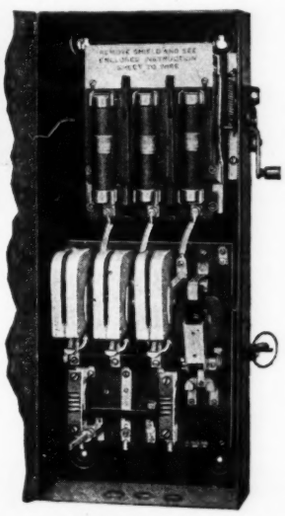
One of 85 G-E CR7008 combination magnetic switches controlling and protecting G-E screenless, open textile motors on spinning frames in a Southern textile mill

DID it ever occur to you that your magnetic switches may be causing you unnecessary expense? If not, think of the many times that your switches have thrown motors off the line during harmless overloads, halting your production temporarily and needlessly wasting the time of your operators. Such shutdowns are, perhaps, inexpensive in the individual case, but they are unnecessary and they total a surprising amount in a year's time.

New G-E magnetic switches will not only guard your motors against overloads, but their unique design will also permit the motors to continue in operation when the overload is of short duration and harmless. G-E magnetic switches will give you this outstanding protection because they are designed to follow closely the heating characteristics of your motor.



Above: *The G-E CR7006-D40 a-c magnetic switch is an ideal full-voltage starter for induction motors. All switch parts are readily accessible*



Right: *Where installation costs must be reduced to the minimum, the G-E CR7008 combination magnetic switch, with fused motor-circuit switch, is particularly advantageous*

Why not plan to replace your old switches with this modern control? Our specialists will be glad to work with you at any time. General Electric, Schenectady, N. Y.

080-63

GENERAL ELECTRIC

Here's how Alemite cuts costs IN TEXTILE MILLS

ALEMITE CUTS FRONT ROLL STAND LUBRICATION 66⅔% FOR PROXIMITY

★

Lubricating Front Roll Stands on Whitin Spinning Frames at Proximity Manufacturing Co. of Greensboro, N.C. For bearings of this type, Alemite Temprite Light (E. P.) is recommended. It is a pure solidified oil that remains plastic in the bearings. It won't splash or contaminate the product.

Lubrication Operations Reduced! Time, Labor, and Lubricant Saved!

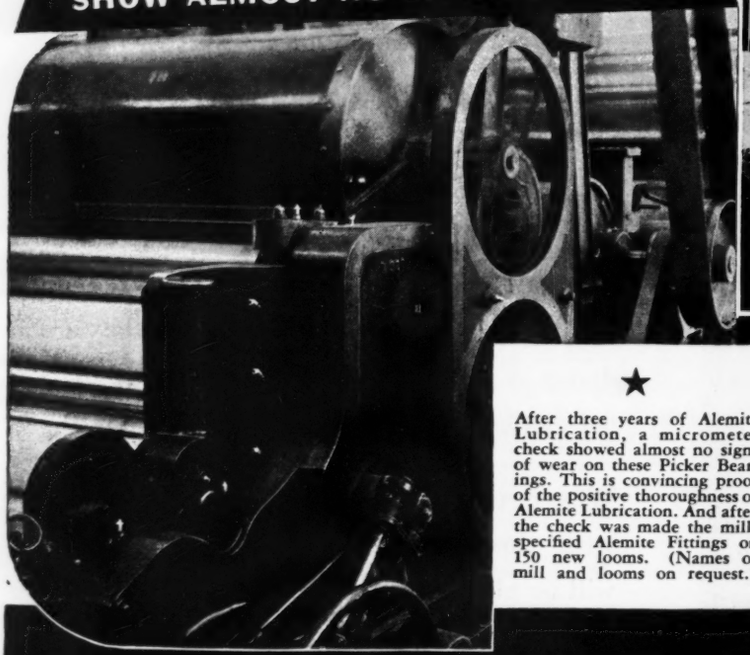
TEXTILE mill operators are slashing maintenance costs with Alemite Lubricating Systems. They're doing away with dripping, lint-clogged oil holes. They're adopting Alemite's modern, scientific, low-cost way to keep their machines paying profits! Remember — Alemite is now standard equipment on most new textile machinery,

The examples shown here are but three of many mills that have found it well worth while to change over to Alemite. And you, too, can modernize Looms, Pickers, Carding Machines, Openers, Flying Frames, Winders, and other machines — with Alemite, without interrupting operations.

Without obligation to you, Alemite will be glad to consult with you on ways to cut your costs and increase your production efficiency. Or, let us send you our new book, "The Case of Alemite vs. Friction." It's free!

ALEMITE
A Division of Stewart-Warner Corp'n.
1884 Diversey Parkway Chicago, Ill.
Stewart-Warner-Alemite Corp'n. of Can., Ltd., Belleville, Ontario, Canada

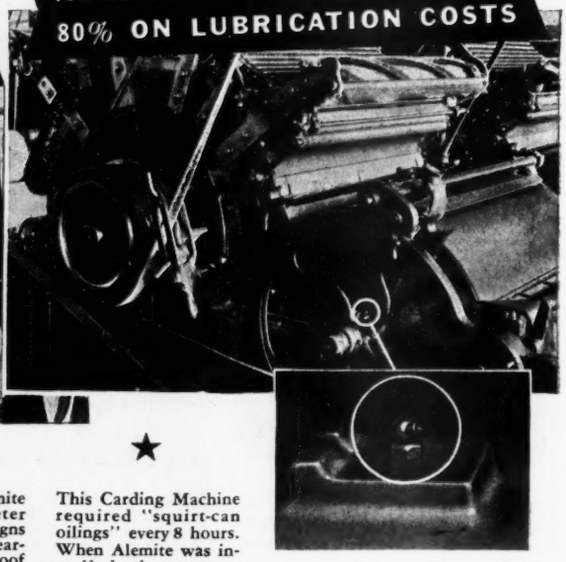
AFTER THREE YEARS OF ALEMITE LUBRICATION, PICKER BEARINGS SHOW ALMOST NO SIGNS OF WEAR



★

After three years of Alemite Lubrication, a micrometer check showed almost no signs of wear on these Picker Bearings. This is convincing proof of the positive thoroughness of Alemite Lubrication. And after the check was made the mills specified Alemite Fittings on 150 new looms. (Names of mill and looms on request.)

ALEMITE SAVES WHITTIER 80% ON LUBRICATION COSTS



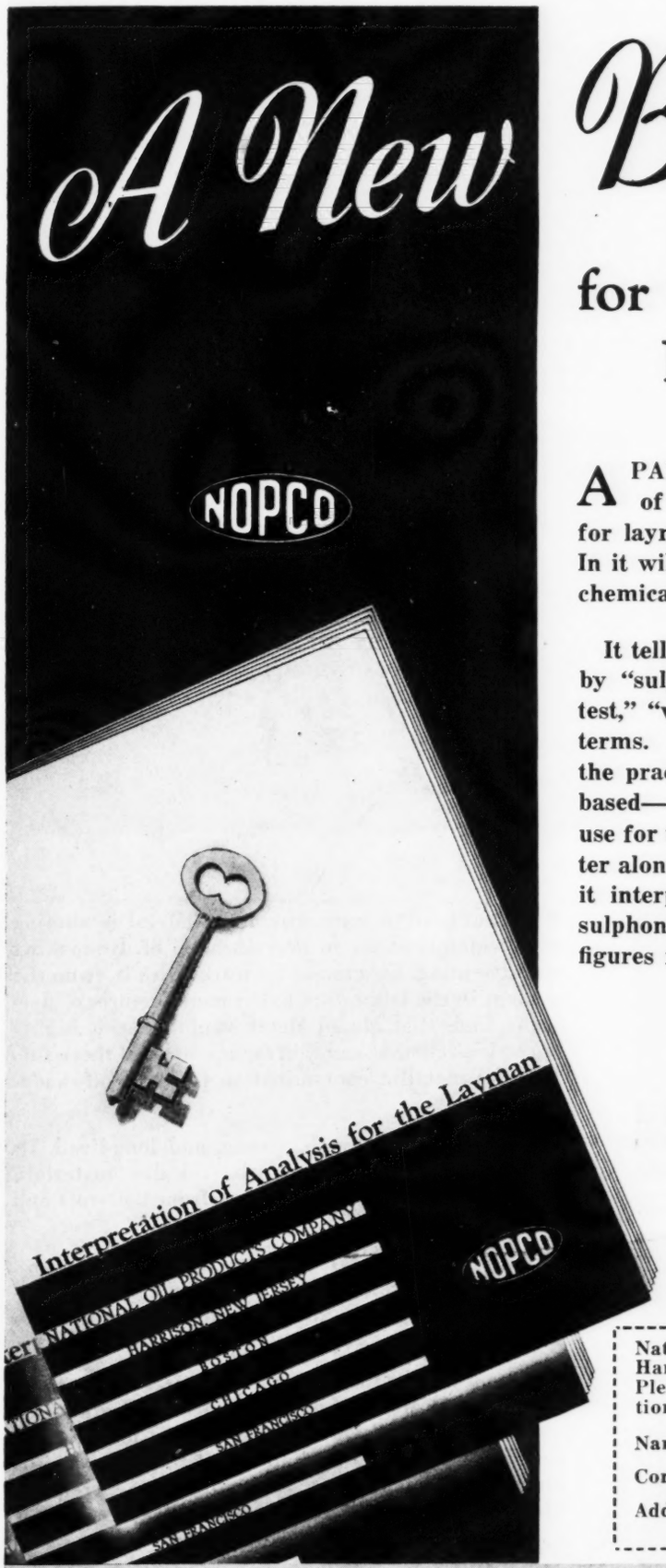
★

This Carding Machine required "squirt-can oilings" every 8 hours. When Alemite was installed, these operations were reduced to only one lubrication every 2 weeks. The result was —a saving of 80% on lubrication costs and the elimination of repairs. This is a typical Alemite money-saving story.

ALEMITE REG U. S. PAT. OFF.

TEMPRITE LUBRICANTS
LUBRICATION EQUIPMENT

Cut Costs in Textile Mills



A New Booklet

for Textile Executives, Laymen—Chemists

A PAMPHLET consisting of forty odd pages of practical information written especially for laymen but valuable to the chemist as well. In it will be found a glossary of commonly used chemical terms.

It tells in plain simple language what is meant by "sulphonation," "acetyl value," "pH," "cold test," "viscosity," "superfatted," and many other terms. It outlines the fundamentals upon which the practical application of sulphonated oils are based—a valuable aid in determining the proper use for the different sulphonated oils. This chapter alone would be worth sending for. And lastly, it interprets for you the practical meaning of sulphonated oil analysis. It tells you what the figures mean after you get them.

Every buyer and user of soluble textile oils will find this a useful and handy reference book. Judging from the demand for previous Nopco bulletins, we suggest that you write promptly for your copy.

Member of Throwsters Research Institute, Inc.
Member of U. S. Institute for Textile Research, Inc.

National Oil Products Co.
Harrison, N. J.
Please send me your new free booklet "Interpretation of Analysis for the Layman."

Name _____

Company _____

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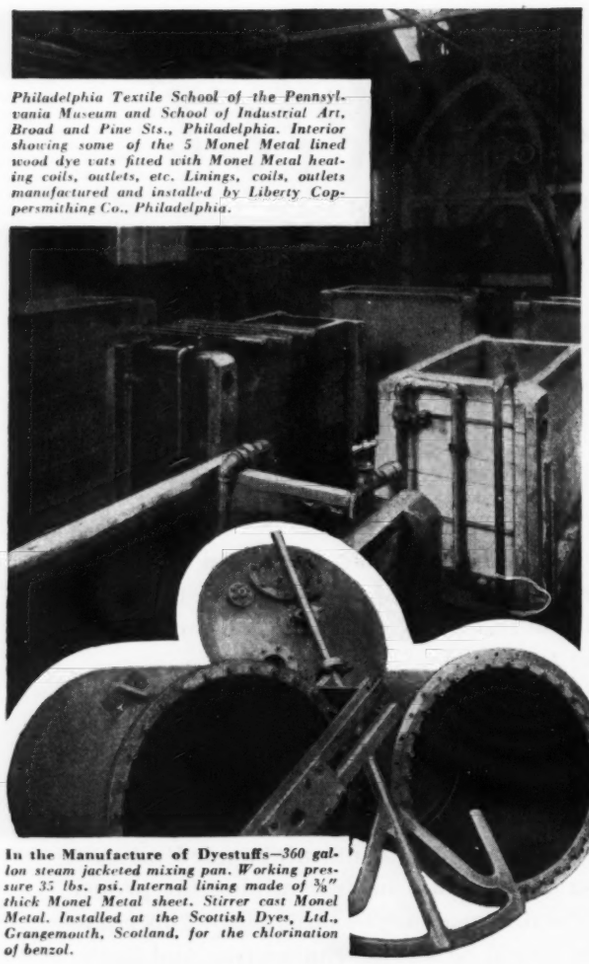
C-1

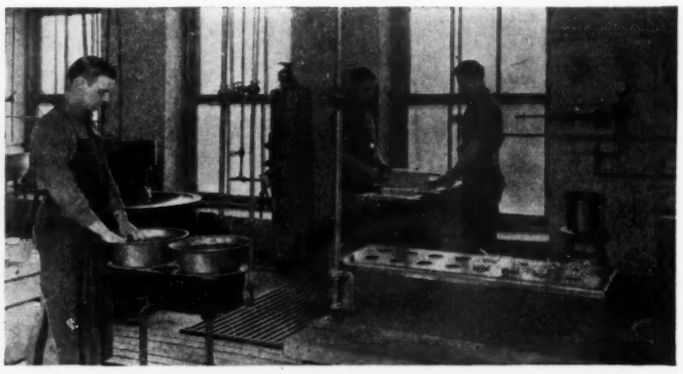
National Oil Products Company, Inc.

HARRISON, NEW JERSEY BOSTON - CHICAGO - SAN FRANCISCO



Philadelphia Textile School of the Pennsylvania Museum and School of Industrial Art, Broad and Pine Sts., Philadelphia. Interior showing some of the 5 Monel Metal lined wood dye vats fitted with Monel Metal heating coils, outlets, etc. Linings, coils, outlets manufactured and installed by Liberty Coppersmithing Co., Philadelphia.

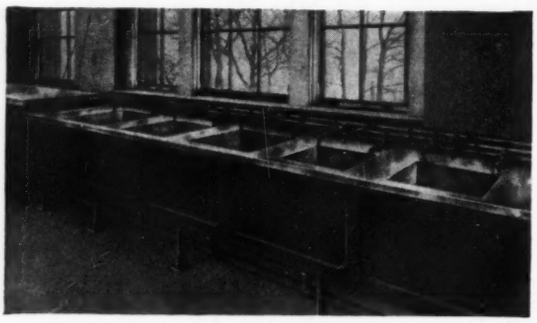
In the Manufacture of Dyestuffs—*360 gallon steam jacketed mixing pan. Working pressure 35 lbs. psi. Internal lining made of 3/8" thick Monel Metal sheet. Stirrer cast Monel Metal. Installed at the Scottish Dyes, Ltd., Grangemouth, Scotland, for the chlorination of benzol.*



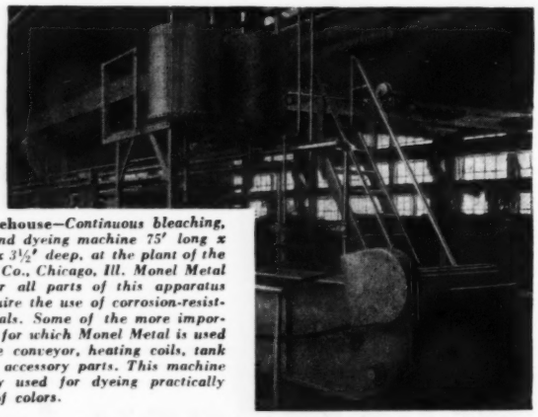
In the Textile School—*Students at work in dyehouse of Clemson College, South Carolina. This dyehouse equipped with Monel Metal including linings for skein vats, dye sticks, pans, pails and dippers, and water bath for sample of dyeing.*

A Lesson that is Learned for LIFE

Students in school discover what dye makers, color chemists, and practical dyehouse men all know, the advantages of equipment made of Monel Metal



In the Technical Laboratory—*Monel Metal construction used in hand vats in the technical laboratory of a well known dyestuff manufacturer.*



In the Dyehouse—*Continuous bleaching, scouring and dyeing machine 75' long x 3½' wide x 3½' deep, at the plant of the Olson Rug Co., Chicago, Ill. Monel Metal is used for all parts of this apparatus which require the use of corrosion-resistant materials. Some of the more important parts for which Monel Metal is used include the conveyor, heating coils, tank lining and accessory parts. This machine is regularly used for dyeing practically all types of colors.*

● It's not hard to learn why Monel Metal is winning such widespread use in every branch of dye-making and dye-using. Everyone who works with it, from the student in the laboratory to the manufacturer of dyestuffs, finds that Monel Metal cannot rust, is highly corrosion-resistant and that for most colors there's no harmful metallic contamination to cause off-shades and rejects.

Monel Metal is tough, strong, and long-lived. Its dense, smooth surface absorbs no dye materials. That reduces time formerly lost from boil-outs and clean-ups.

With Monel Metal in your dyeing equipment, there's no surface coating to chip, crack or wear off—hence no danger of rough spots to snag delicate fabrics.

As you look at the photos at the left, see how these properties of Monel Metal are turned to advantage by *every branch* of the dye industry. Send for "List B"—a listing of all the available bulletins and reprints on subjects of interest to textile men, dyehouse chemists, dye makers and students.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York, N. Y.

MONEL METAL

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

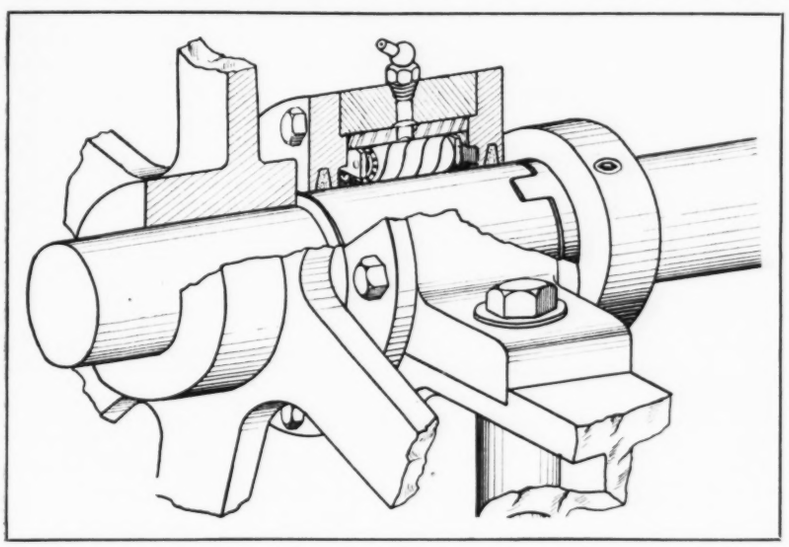
ANOTHER SOURCE OF TAX RELIEF

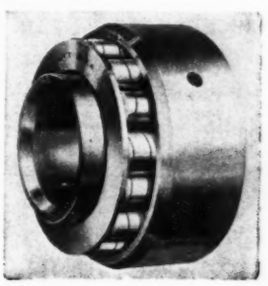
Today, taxes are a chief topic of conversation even tho, like Mark Twain's comments on the weather, everyone may be talking about them and not doing much about it.

But, there is one tax that every mill man can do something about himself. We refer to the tax which friction collects every year.

Take looms for example. For years, in the vast majority of looms, the shafts have rubbed around and around in plain bearings eating power and oil. However, today you can specify modern bearings as the users of over 15,000 Hyatt-equipped looms have done and have your shafts rolling on Hyatts instead of rubbing on obsolete bearings. Let us, or your loom builder give you further details. Hyatt Roller Bearing Company, P. O. Box 476, Newark, New Jersey.

HYATT BOTTOM SHAFT BEARING





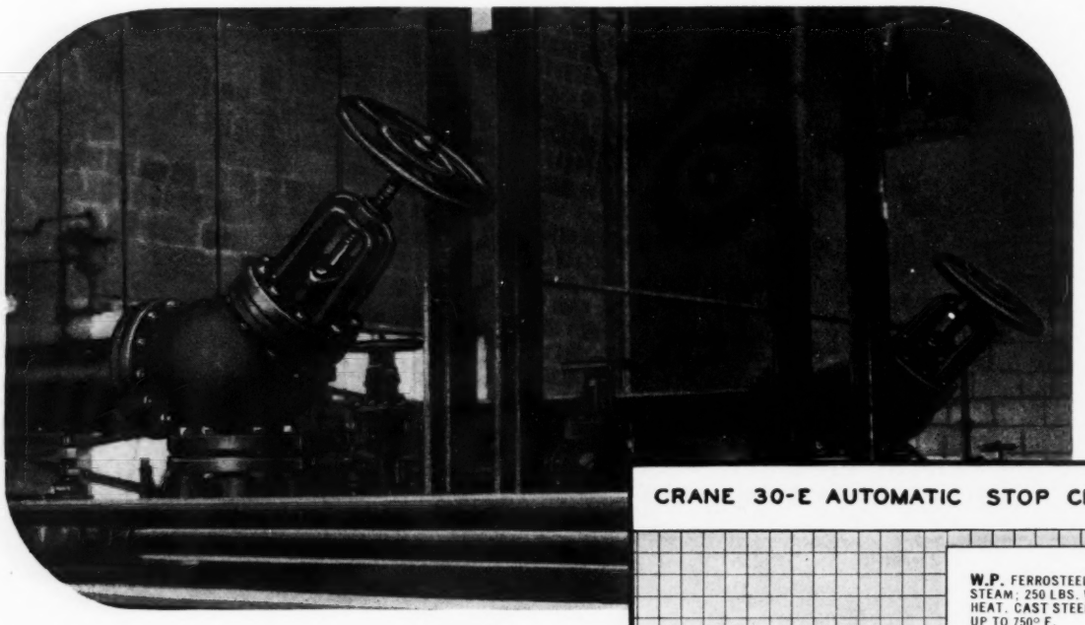
The steady pounding of the pick balls causes bottom or camshaft bearings to wear egg shaped. Timing of the loom is destroyed. When this shaft is mounted on Hyatt Roller Bearings correct timing is maintained for the life of the loom.

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

ARE YOUR STOP CHECK VALVES CHATTERING?



CRANE 30-E AUTOMATIC STOP CHECK VALVES

W.P. FERROSTEEL, 250 LBS. SATURATED STEAM; 250 LBS. WITH 500° F. SUPER HEAT. CAST STEEL, 300 LBS. STEAM UP TO 750° F.

STYLES: STRAIGHT "Y" AND ANGLE "Y" USED VERTICALLY OR HORIZONTALLY.

1 VALVE OPENS ONLY WHEN BOILER PRESSURE EXCEEDS THAT IN MAIN; CLOSES INSTANTLY WHEN BOILER PRESSURE FALLS BELOW THAT IN MAIN.

2 VALVE CAN BE EQUIPPED WITH SPECIAL LINER TO GIVE REDUCED OPENING WHERE BOILER LOAD HAS BEEN REDUCED; PREVENTS CHATTERING AND WEAR ON DISC AND SEAT.

3 EXCELLENT AS A FEED LINE CHECK OR SAFETY AND ECONOMY VALVE BETWEEN AIR COMPRESSORS AND RECEIVER OR MAIN LINE.

4 FERROSTEEL BODY AND YOKE WITH STEEL STEM; OR CAST STEEL BODY AND YOKE WITH EXELLOY STEM.

5 SEAT AND DISC OF CRANE HARD METAL; SEAT RENEWABLE. MONEL METAL DISC AND SEAT AVAILABLE.

6 FLANGED STYLE IN ALL SIZES; SCREWED AVAILABLE IN 2½ TO 6".

Stop check valves, where velocities are low, will chatter, hammer, and wire-draw—cutting and destroying seating surfaces. This is an unnecessary burden in the form of excessive maintenance cost—inefficiency and waste which will steal from profits.

Crane 30-E Stop Check Valves give ample velocity for high lift of the disc despite low velocity in the pipe line. This is accomplished by a special liner with which the valve can be equipped, either at the time of installation or at a later date when conditions require. Thus, if it becomes necessary to reduce velocity in a pipe line where this valve has been in operation, satisfactory velocity at the valve is assured by installation of the special liner without disturbing the piping.

Let Profits Pay for Plant Improvements. Use the Crane Finance Plan.

Write for complete information on Crane Stop Check Valves and recommendations for their proper installation. The 30-E is but one of scores of Crane special purpose valves and fittings. There are Crane stocks near you. A phone call will bring prompt service.

CRANE

CRANE CO.; GENERAL OFFICES: 836 SOUTH MICHIGAN AVENUE, CHICAGO, ILL. • NEW YORK: 23 W. 44TH STREET

Branches and Sales Offices in One Hundred and Sixty Cities

VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

Air-photo of Andes Mountains, courtesy PAN AMERICAN AIRWAYS

STEIN, HALL & COMPANY, INC.

EST. 1866

285 MADISON AVENUE NEW YORK CITY

BOSTON PROVIDENCE CHICAGO PHILADELPHIA CHARLOTTE SAN FRANCISCO
TORONTO ROCHESTER BUFFALO LOS ANGELES

HEADQUARTERS FOR ALL TEXTILE STARCHES, DEXTRINES, GUMS AND TAPIOCA FLOURS

Horizontal open design REEVES with handwheel control. Mounts in any position on floor, platform, ceiling, or may be incorporated in driven machine.
Horizontal enclosed design with Mechanical Automatic Control. Used in synchronizing two or more machines, and for maintaining constant peripheral speed in winding or cutting.
Vertical open design with Electric Remote Control, adjustable motor base and space-saving motor mounting.
Vertical enclosed design with handwheel control. For use where floor space is limited.
Vari-Speed Motor Pulley for direct application to standard shaft of any constant speed motor, provides infinite adjustability over 3:1 range.
Horizontal enclosed design with integral motor mounting. Centralized lubrication. Fully protected against moisture, dust, chemicals, etc.

• These are only a few of the many units in the complete REEVES Line of Speed Control Equipment

THE *Correct* SPEED CONTROL FOR *Every* TEXTILE PLANT REQUIREMENT

● Variable speed requirements in the textile industry demand variable speed drives of many different sizes, designs, types, controls—and a wide range of speed ratios.

REEVES engineers discovered years ago that one standard unit *cannot* serve all needs. Thus **REEVES** offers a complete line of transmissions—a *correct* unit in every instance to insure smoother, faster, more uniform production on beamers, warpers, slashers, tenter frames, dry cans, conditioners, extractors, calenders, mercerizers, inspection tables—in fact on any production unit from preparation to finishing.

Three years ago **REEVES** introduced the first successful automatic variable speed control for ring spinning, using the same operating principle as the *time-tested* **REEVES** Variable Speed Transmission. With this long-needed development—available for either filling and combination build or warp build—it is now easy to maintain an even tension and twist on yarn from empty to full bobbins and secure many vital improvements in yarn quality.

Look to REEVES for Accuracy in Speed Control

For providing infinite speed adjustability to each individual machine or perfect synchronization of machines in range, there is no other means of obtaining and holding the same degree of precision and uniformity that is secured through **REEVES** Variable Speed Control. What machines in your mill need this accurate, wide-range speed selectivity? Our engineers will show, without any obligation, how easily **REEVES** Variable Speed Control units may be applied. Write us today for complete information on a specific application in your mill.

REEVES PULLEY COMPANY, COLUMBUS, INDIANA
Without obligation, send facts on applying **REEVES** Speed Control to:

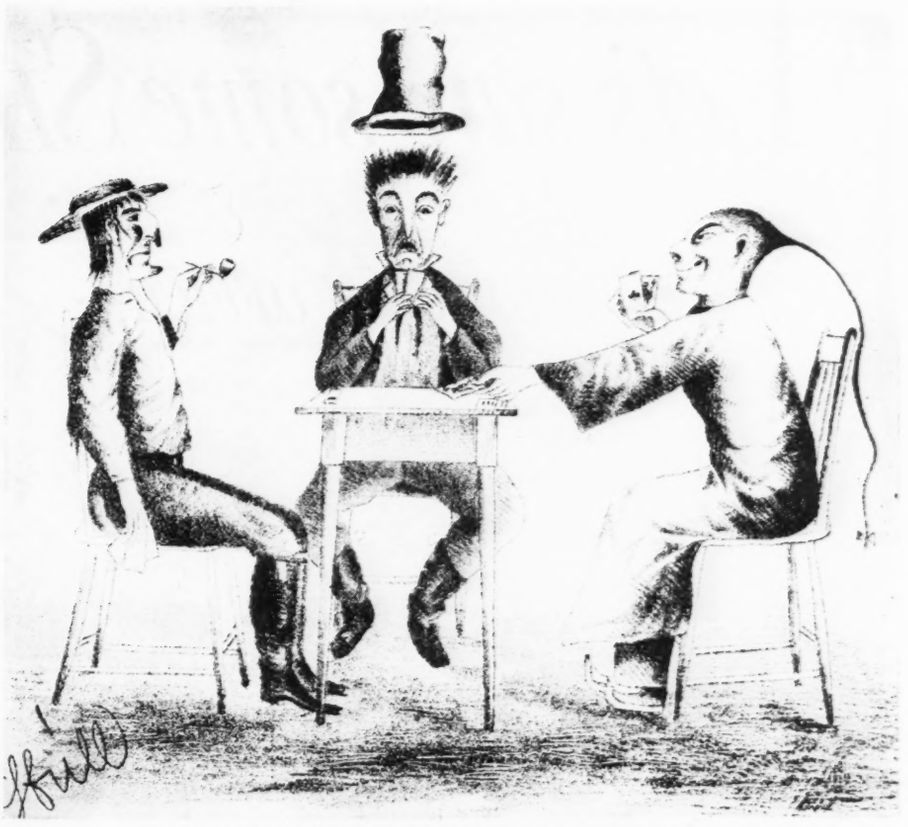
2-36 Also send copy of Handbook T-36.

Name.....

Company.....

Address.....

"THE HEATHEN CHINEE"



From the original edition of Bret Harte's famous poem—courtesy of The American News Company.

● Introducing Truthful James and Bill Nye, who plan to bankrupt the naive Ah Sin at euchre! But the wily Chinaman, with his child-like smile and professed ignorance of the game, outwits them both!

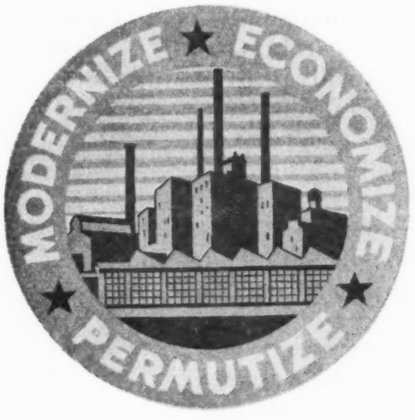
Like the Heathen Chinee, untreated supply water used in textile wet-processing has that same harmless appearance but deceptive nature. Mill owners now realize that such water lowers the quality of their finished goods.

Supply water must be *absolutely clear, soft and colorless* to meet modern-day requirements. Textile experts will tell you that practically *all* mill water supplies must be properly filtered or softened, or perhaps even further treated to enable finished goods of high quality to be produced.

That is why more than 1,000 textile mills now use Permutit Water Conditioning Equipment.

The benefits from such equipment are immediately noticeable. There are fewer reruns and rejections, and less yarn breakage . . . because soft water eliminates harsh, insoluble curds, and fibres come through clean and pliable. Soap, soda and bleach are saved. And boiler-tube repairs and replacements are reduced to a minimum.

We will be glad to show you how water conditioning can benefit *your* mill. Just mail the coupon below for complete descriptive literature. Learn how Permutit equipment *pays for itself* in two short years.



Permutit Water Conditioning Equipment may now be purchased under the terms of the National Housing Act. These loans are not made by the Government, but by your own banker . . . or they can be arranged through Permutit. The terms of payment allow gradual liquidation over a period of years, so your payments are more than met by the savings effected by Permutit.

Permutit
Water Conditioning Equipment

THE PERMUTIT COMPANY, Dept. B1, 330 West 42nd St., New York City

Please send me, without obligation, complete details about the purchase of Permutit Equipment under the terms of the National Housing Act.

Name _____

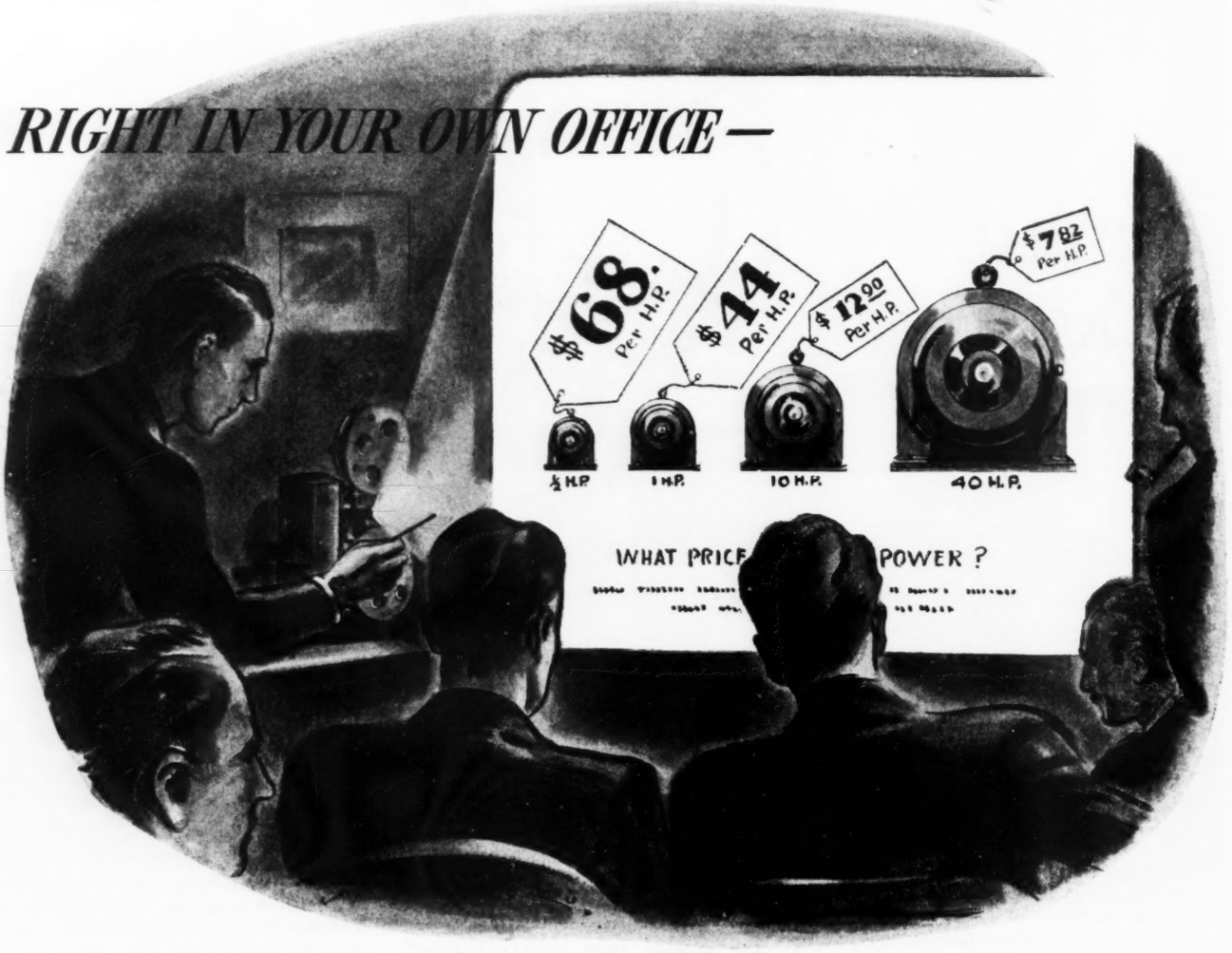
Position _____

Company _____

Address _____ City _____

Let's save some SHOP COSTS

RIGHT IN YOUR OWN OFFICE—



MANY well-known industrial plants have earned new net profits by saving power dollars through the application of Modern Group Drive principles. For instance:

The shingle department of a large Western lumber mill was to be changed over from old-fashioned lineshaft drive to individual motor drive at a cost of $8,165 (on which the fixed charges would be $1,225 annually). A Modern Group Drive plan was submitted, to cost $3,767 (or $565 per year in fixed charges). This plan was adopted, and not only was $660.00 per year saved, but a very high plant efficiency resulted, with maximum production and lessened maintenance.

Fully half of Industry's billion-dollar-a-year bill for power is wasted today, getting the power to the machines. See our twenty-minute moving picture which lays bare the roots of the problem—*in your own office!*

Since this picture will suggest to your engineers new and more economical methods of driving your machines (based on years of research), you will discover the source of unsuspected new profits when seeing it.

When may we call? Or shall we first send you a free copy of our Red Book, "A Practical Analysis of Some Fundamentals of Industrial Power Transmission?"

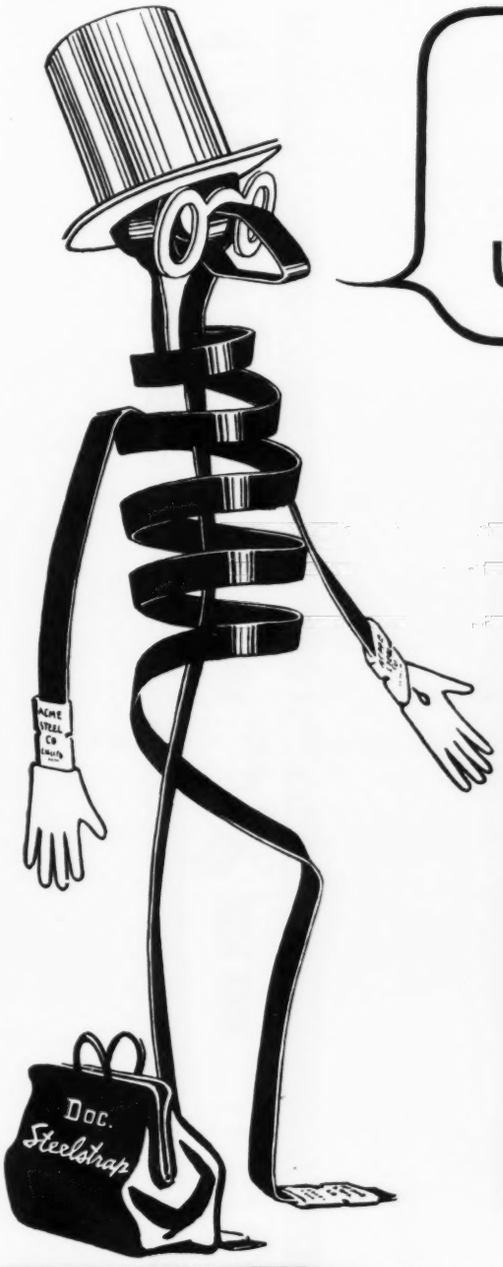
POWER TRANSMISSION COUNCIL
1 ATLANTIC STREET, STAMFORD, CONN.

A research association of producers and distributors of power, power units and mechanical equipment for the transmission of power.

MODERN GROUP DRIVE PTC

A POWER DOLLAR SAVED IS A PROFIT DOLLAR EARNED

THERE'S A REASON MOST TEXTILE MILLS USE ACME STEELSTRAP



● I have served so many textile people—and if I do say so, saved them some goodly sums of money—that I feel like a mill man myself.

With the correct application of Acme Steelstrap reinforcing band, lighter-weight containers often can be used without sacrificing strength and protection.

What's more, with Steelstrap, your boxes and bales are prepared for shipment faster and arrive in better condition. Pilferage is effectively discouraged.

Write me about the products you ship. Let me build up the protectiveness of your package while I trim off the weight and cost. I'll be glad to send my Strap-Book, Steelstrap, tools and seals to try out yourself.

Doc. Steelstrap

Acme Steelstraps

ACME STEEL COMPANY, GENERAL OFFICES: 2847 ARCHER AVE., CHICAGO
ATLANTA NEW ORLEANS SAN FRANCISCO BOSTON NEW YORK
Branches and Sales Offices in Principal Cities

For

SOUTHERN TEXTILES

SALES BUILDERS

New Designs Reproductions

JACOBS GRAPHIC ARTS CO.

CLINTON · S.C.

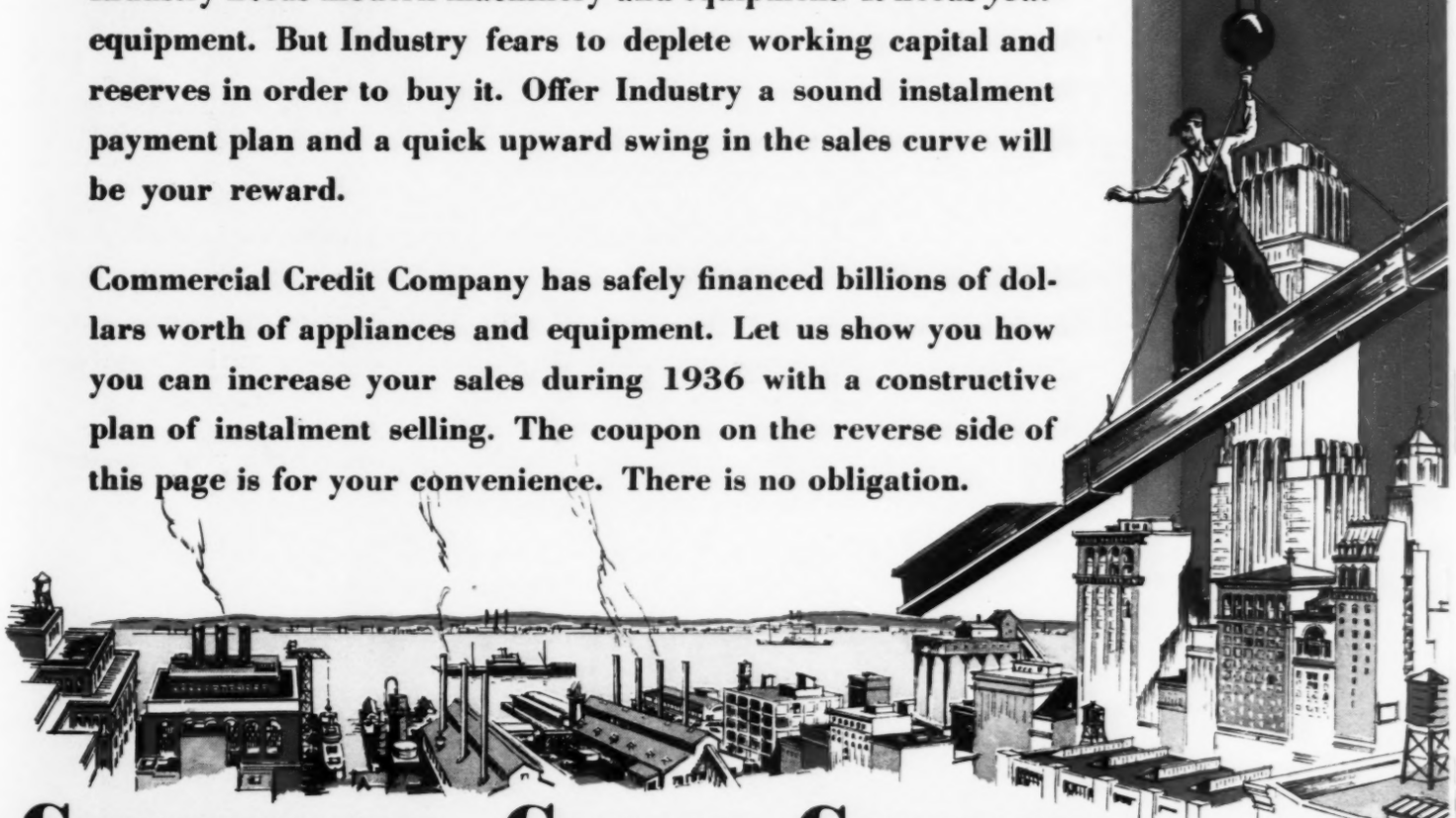
Increase Your Sales—Now!

Manufacturers of income producing machinery and equipment have a great sales-getting weapon at their finger tips. That instrument is instalment selling—the Federal Housing Administration plan for financing the modernization program of plant and factory.

If your equipment is income producing, if it is capable of paying for itself from the savings it will effect, why wait longer to materially increase your sales through the tried and proven method of instalment selling.

Industry needs modern machinery and equipment. It needs *your* equipment. But Industry fears to deplete working capital and reserves in order to buy it. Offer Industry a sound instalment payment plan and a quick upward swing in the sales curve will be your reward.

Commercial Credit Company has safely financed billions of dollars worth of appliances and equipment. Let us show you how you can increase your sales during 1936 with a constructive plan of instalment selling. The coupon on the reverse side of this page is for your convenience. There is no obligation.



COMMERCIAL CREDIT COMPANY

COMMERCIAL BANKERS Headquarters BALTIMORE

CONSOLIDATED CAPITAL AND SURPLUS $45,000,000

FINANCING *Income Producing Machinery & Equipment*

ENORMOUS SAVINGS in power costs have been made in the Cotton Ginning industry by the replacement of old with new type prime movers. A modern engine installation at St. Joseph, La., operates four 80-saw gins and shows a 90% saving over former power costs. A comparison of power costs of various types indicates that steam power usually costs ginners up to $1.00 a bale; *purchased* electric power for the operation of electric motors costs from 60c to $1.10. Oil or gas power costs, however, average only from 4 cents to 12 cents a bale.

* * * *

A milk plant in New Haven, Conn., reports results obtained from a recent installation of a Power Drive, as follows: "We estimate we have saved approximately $47 in the first month's operation of our ammonia compressor."

* * * *

A Colorado municipal water works renders a comparative cost record on two pumping stations, one operated by electric motor, the other by engine. With the former, the cost was slightly more than 2 cents per 1000 gallons. With the Diesel, it was ¾-cent, a saving of 64%.

* * * *

Modernization of equipment in an Illinois flour mill reduced costs from 22.4c to 5.9c per barrel, a saving of 74%.

* * * *

Modernization and replacement programs are cutting costs and increasing profits throughout the nation's industrial ranks, through the time-payment purchase of materials handling equipment, lathes, grinders, presses, bottling machinery, laundry machinery, lighting units, pumping units, tractors, and various other types of equipment.

Act today. Get the complete story of how we can help you finance your requirements. Mail the coupon.

F·H·A· PLANS

Available through COMMERCIAL EQUIPMENT CORPORATION AFFILIATE where federal requirements can be fulfilled.

COMMERCIAL CREDIT COMPANY

COMMERCIAL BANKERS

HEADQUARTERS....BALTIMORE

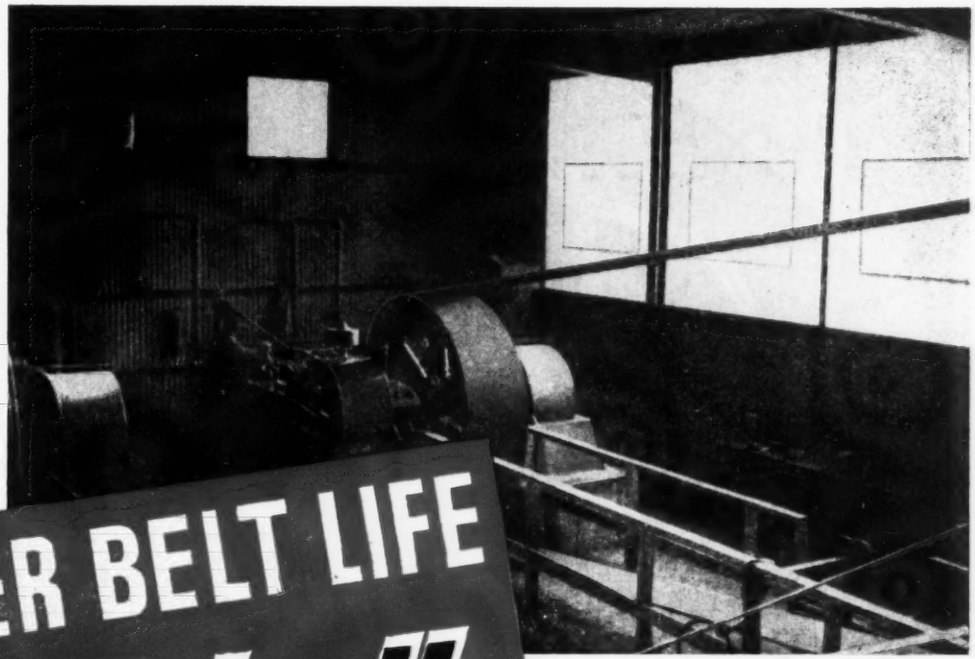
COMMERCIAL CREDIT COMPANY
Baltimore

Without cost or obligation to me, please advise me how your time-payment financing plans can help me increase my sales.

Company name _____

By _____

Street address _____



YOU'LL GET... LONGER BELT LIFE with Challenger SQUARE EDGE BELTING

GREAT CARE is used in selecting and inspecting the strong silver duck that goes into Challenger and in preparing the high grade rubber compounds that impregnate the fabric and form the skim between all plies. The design of this belt and every detail of its construction makes for long life. Challenger will wear and wear, day in and day out, year after year under heavy duty or high speed service.

Long belt life means less replacements, less maintenance expense, fewer take-ups and uninterrupted service. Nothing is more satisfying to engineers than a strong, flexible belt with pulley-gripping surface, low permanent stretch and even tension that keep both power cost and belt cost right down to the minimum.

Challenger has no equal in meeting these requirements. It is made in roll or cut lengths or endless to specifications. Put Challenger to work on your next transmission job and watch its long record of efficient performance.

THE REPUBLIC RUBBER CO. YOUNGSTOWN, OHIO

MECHANICAL RUBBER PRODUCTS FOR EVERY INDUSTRIAL REQUIREMENT

• ORDER REPUBLIC RUBBER PRODUCTS • FROM YOUR DISTRIBUTOR

Three Features in one

SAVINGS OF 25 TO 30% IN PEROXIDE COSTS

•

TRUE, PERMANENT WHITES AND BRIGHTER COLORS

•

HIGH-QUALITY BLEACH

•

...when you process your cotton goods with du Pont SOLOZONE

•

You get all of these features and many others when you use SOLOZONE* for Peroxide-bleaching of cottons. The bleach is quick and certain. It is decidedly economical. A saving of 25-30% in Peroxide costs is quite conservative considering that SOLOZONE is the lowest-priced, highest-strength commercial Peroxide. *A dollar's worth of* SOLOZONE *has the most bleaching oxygen for the money,* and after all, it is the bleaching oxygen in any Peroxide that does the work.

SOLOZONE can be used profitably for all types of cottons — heavy or light goods, yarn-dyed shirtings, sheeting, color piece goods, and other goods which have vat-dyed stripes or borders where clear ground and bright borders are required.

These and many other cotton textiles can be processed with economy and satisfaction with SOLOZONE.

Our nearest District Office will be glad to give you more information about SOLOZONE and its specific application for your bleaching.

DU PONT
REG. U. S. PAT. OFF.

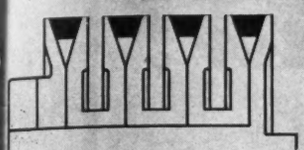
*The registered trade-mark for du Pont Sodium Peroxide — a stable water- and acid-soluble powder containing 20% available bleaching oxygen.

SOLOZONE
REG. U. S. PAT. OFF.

E. I. DU PONT DE NEMOURS & CO., INC.
The R. & H. Chemicals Department, Wilmington, Delaware

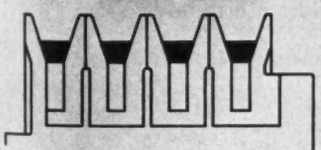
WRITE TODAY FOR PARTICULARS

From HIGH speed to LOW speed



Vari-Pitch Sheave adjusted for maximum diameter-high speed.

15% TO 25% VARIATION IN SPEED



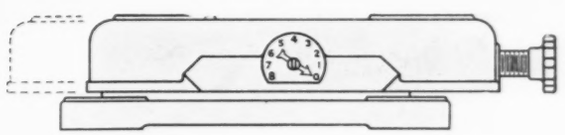
Vari-Pitch Sheave adjusted for minimum diameter-low speed.

WITH THE NEW VARI-PITCH TEXROPE SHEAVE

It requires nothing but a simple adjustment, taking but a few moments, to alter the diameter of this new Vari-Pitch Sheave for Texrope V-Belt Drives; which means that you can alter the speed of your driven machines from 15 to 25% per sheave; if both sheaves are of this type a variation of 30 to 50% is possible.

This vitally important new development in power transmission permits you to make different products on the same machines, some of which require higher speeds, some lower; it permits you to experiment with different speeds to ascertain at just what speed your machines show the greatest efficiency—and do all this without dismantling and buying new drives, but simply by taking a few moments to make the desired adjustment.

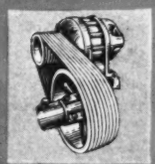
Vari-Pitch Texrope Sheaves are made for stationary and motion control. To get full information, write for Bulletin No. 1261.



Straitline Automatic Ball Bearing Motor Base developed for the motion control Vari-Pitch Sheave. You simply turn the hand wheel to alter the diameter of the sheave and simultaneously the base moves forward or backward to maintain proper belt tension.

Belts by Goodrich

TEXROPE DRIVES



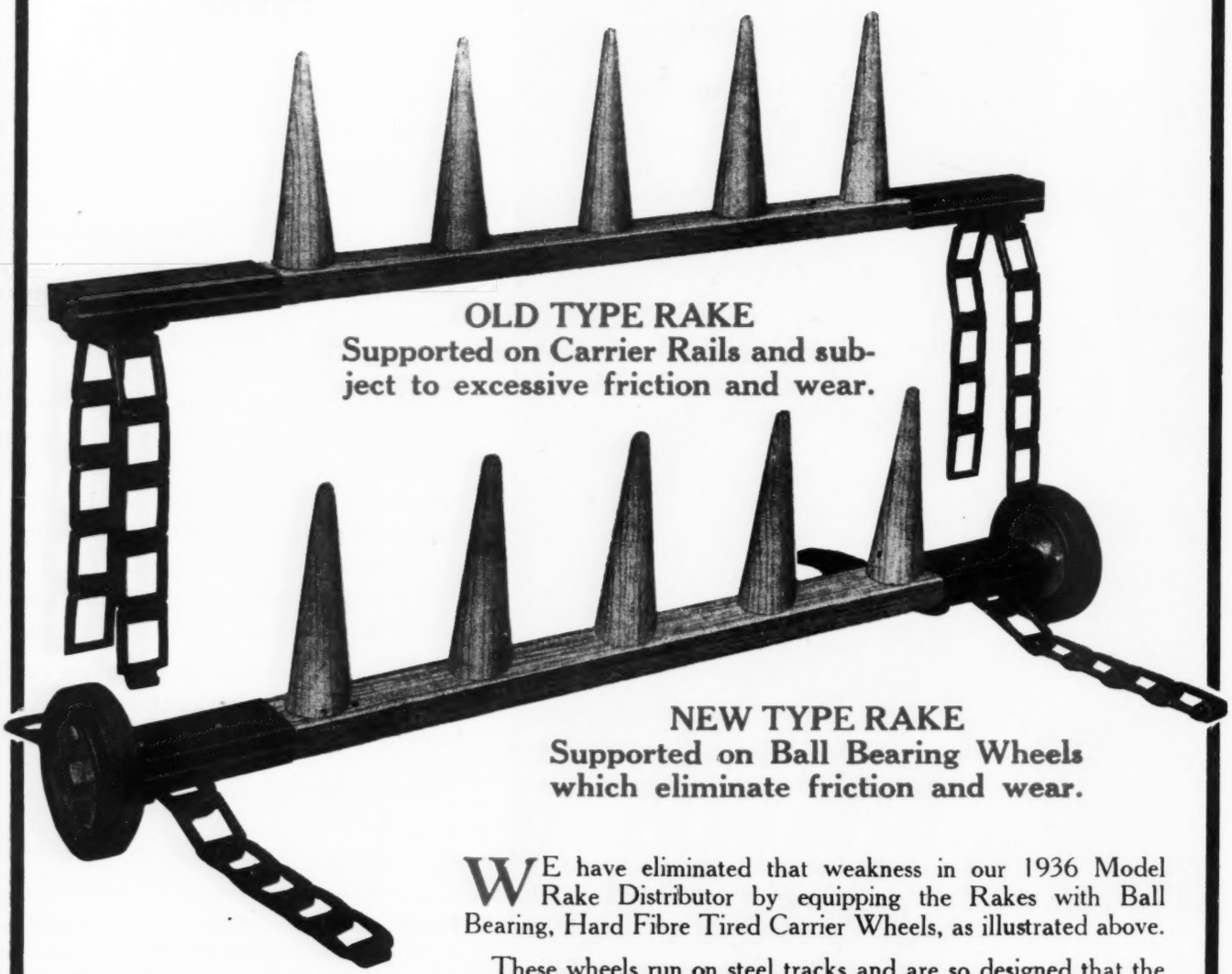
ORIGINATED BY ALLIS-CHALMERS

ALLIS-CHALMERS MANUFACTURING COMPANY · MILWAUKEE, WISCONSIN

A Better Rake Distributor!

The Rake Distributors now generally used in the Industry have one inherent weakness, viz:

THEY ARE SUBJECT TO EXCESSIVE WEAR DUE TO FRICTION OF THE RAKES ON THE CARRIER RAILS.



OLD TYPE RAKE
Supported on Carrier Rails and subject to excessive friction and wear.

NEW TYPE RAKE
Supported on Ball Bearing Wheels which eliminate friction and wear.

WE have eliminated that weakness in our 1936 Model Rake Distributor by equipping the Rakes with Ball Bearing, Hard Fibre Tired Carrier Wheels, as illustrated above.

These wheels run on steel tracks and are so designed that the lubricant in them cannot run out and stain cotton being handled by the Distributor.

The material value of this improvement will be clear to all mills now using Rake Distributors.

If you contemplate installing a distributor, investigate the advantages of this new improvement which will save you the trouble and expense resulting from excessive wear due to friction. Write us for information on the new improved Camco Rake Distributor.

The CENTRIF-AIR MACHINE CO., Inc.

858 Ashby Street, *Engineers and Manufacturers* **Atlanta, Ga.**

"DIAGEN" BLACK DM

(PAT.)

DU PONT announces the development of a new stabilized Azoic color particularly suitable for printing on cotton.

It is recommended as an economical printing black where moderate fastness is desired; possesses good solubility and generally good all-round working properties.

The textile printer will find it adaptable as a self-shade for producing full blacks and also for the shading of blues, to secure darker navies, and as a shading component for browns.

"Diagen" Black DM is the first straight Azoic black which has thus far been offered the textile trade. Blacks of this type have heretofore been secured by mixing blues, reds and yellows.

Carefully controlled physically to insure best results.

DU PONT DYESTUFFS

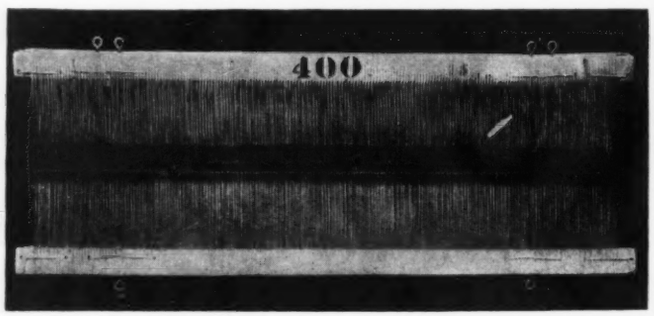
REG. U.S. PAT. OFF.

E. I. DU PONT DE NEMOURS & CO., INC.
Organic Chemicals Department
Dyestuffs Division, Wilmington, Delaware

"EMMONS MAKES EVERYTHING"

—Anything you need in the line of
Loom Equipment for Better Weaving

CHAFELESS CORD
—for fine cover on fine goods



More mills use Chafeless Cord than any other cotton harness made, for this Super-Smooth harness with the Warp-Saving Finish builds up better cover; lessens loom stops due to warp breaks; lasts longer.

Emmons STEEL HEDDLES
—backed by 68 Years Experience

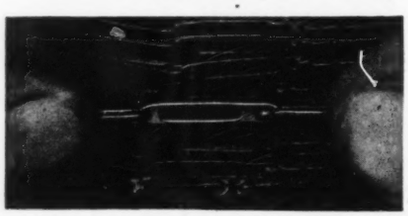
To produce a "chafeless" Steel Heddle; one that reduces warp friction to its lowest coefficient—we use 60 separate polishing operations to bring the inside of the eye to a glass-like, super-smoothness.

Another feature of Emmons "Chafeless" Steel Heddles is the Long-Life Plating, both cadmium and nickel.

Mill men tell us that these steel heddles start up better; that they make a better looking piece of cloth.

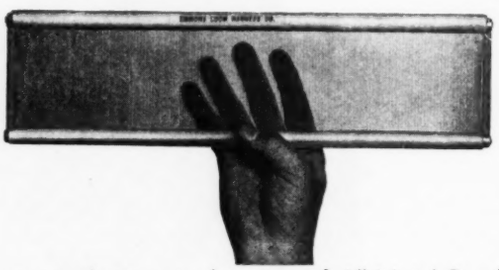
Let us send you samples of the sizes and styles you use. We have a full line of all standard types and sizes, made up and stocked for prompt delivery.

Non-Slip MAIL EYE HARNESS
—for coarse and medium weaves

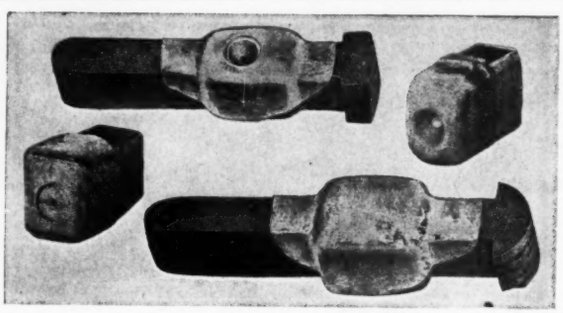


Light as cotton—strong as steel, combining the streamline steel eye, with cotton harness flexibility. Adapted for the drawing-in machine. Equip a section with Emmons Non-Slip Mail Eye and improve production.

METAL and PITCHBAND REEDS

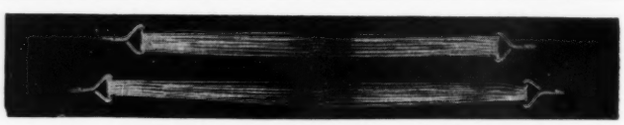


Emmons makes a complete line of All-Metal Reeds with the added flexibility and super-smooth finish you need for weaving rayons. Also Precision-Manufactured Pitchband Reeds, "Custom Made" to your requirements. Quick Deliveries.



LOOP and DOLL PICKERS

As exclusive selling agents for Wardwell Pickers we have in stock complete assortment of all types—for immediate shipment.



Emmons SELVAGE HARNESS

Cotton and Mail Eye Tape Selvages up to 24 inch depth —for use with either Cotton Harness or Steel Heddles.

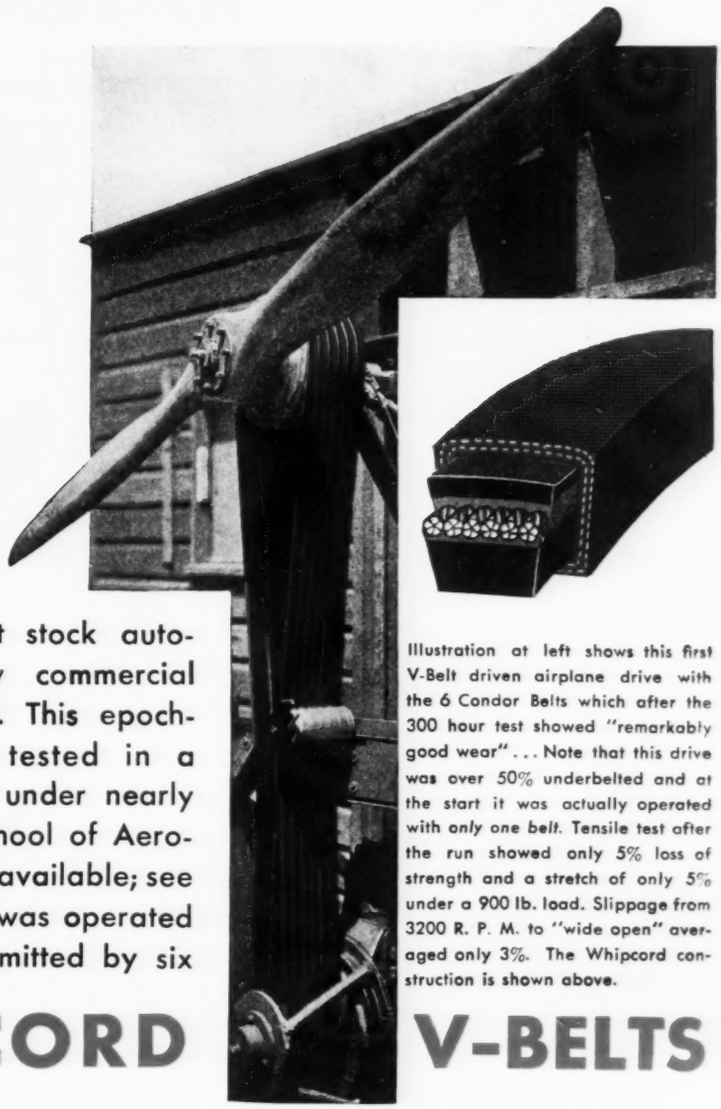
ALSO Mending Eyes and Twine; Beamer and Dresser Hecks; Heddle Frames; Warper and Leice Reeds; Slasher and Striker Combs.

Prices and full information on all items on this page gladly furnished on request.

EMMONS LOOM HARNESS CO.

Lawrence, Mass.

WINGS FOR AMERICA!



The end of the long road to the development of a practical "flivver" airplane is in sight. A way to drive an airplane propeller from a low-cost stock automobile motor, fueled with ordinary commercial grades of gasoline, has been found. This epoch-making drive has been thoroughly tested in a government-supervised endurance run under nearly flight conditions at the Casey Jones School of Aeronautics at Newark, N. J. (Official report available; see below). The engine-to-propeller drive was operated for 300 hours, the power being transmitted by six

Illustration at left shows this first V-Belt driven airplane drive with the 6 Condor Belts which after the 300 hour test showed "remarkably good wear"... Note that this drive was over 50% underbelted and at the start it was actually operated with *only one belt*. Tensile test after the run showed only 5% loss of strength and a stretch of only 5% under a 900 lb. load. Slippage from 3200 R. P. M. to "wide open" averaged only 3%. The Whipcord construction is shown above.

Condor WHIPCORD V-BELTS

It is significant that Condor V-Belts were selected for the drive. *These were stock belts.* The endless Whipcord strength member placed in the neutral axis area, a design originated by Manhattan, makes such performance possible. For you, at the present moment, the important conclusion to draw is this: Since Condor V-Belts have the strength and wearing quality to enable them to pass such a grueling test with "flying colors", they must certainly be *the* belts for your industrial drives. They cost no more. Their outstanding performance is entirely due to their

8-POINT BALANCED CONSTRUCTION

1. Minimum Inelastic Stretch
2. Wide Margin of Strength
3. Uniform Flexibility
4. Maximum Resistance to Structural Breakdown
5. Smooth Running
6. Maximum Traction
7. High Resistance to Side Wear
8. Correct Lateral Reenforcement

Let us send you the Air Commerce Bulletin (left) describing the Casey Jones test with Condor V-Belts and our latest General Catalog and V-Belt Engineering Data Book (right) giving full particulars on Condor Whipcord V-Belt construction.

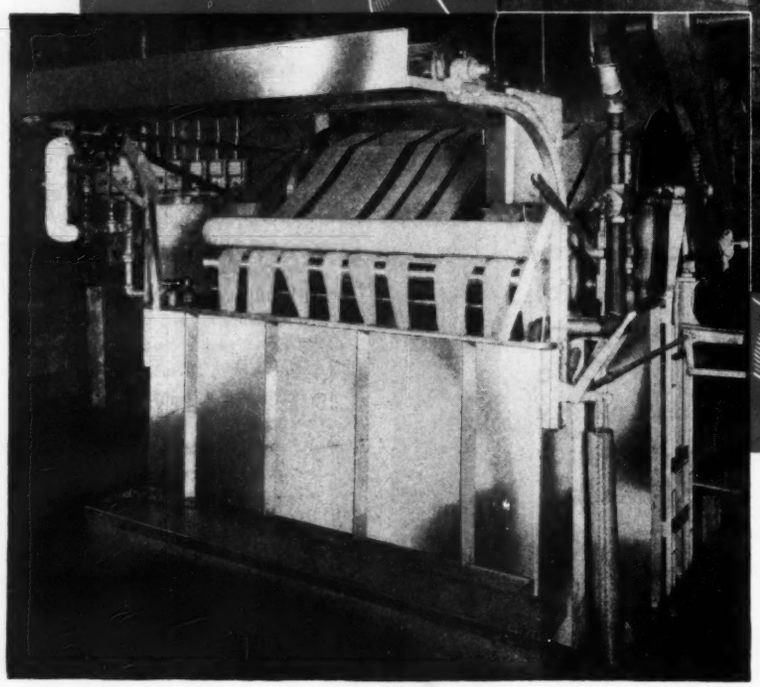
Sold by Leading Jobbers — Manufactured by the Makers of Condor Products. Belt, Hose, Molded Goods, Industrial Brake Lining, Rubber Covered Rolls and Tanks.

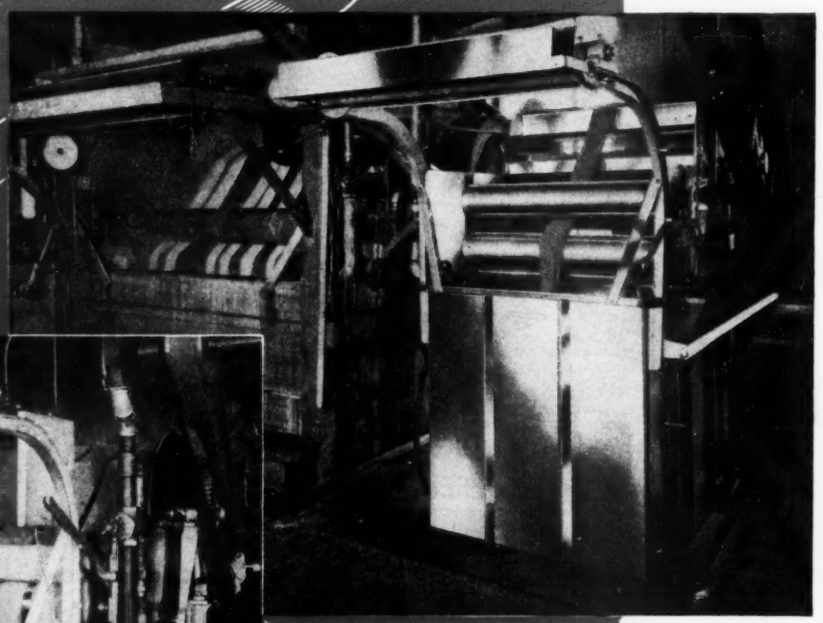
THE MANHATTAN RUBBER MFG. DIVISION

OF RAYBESTOS-MANHATTAN, INC.

EXECUTIVE OFFICES and FACTORIES, 48 TOWNSEND ST., PASSAIC, N. J.

Now Both STRING DYEING MACHINES are stainless Enduro





The upper photo shows a 4-string dye machine made of stainless ENDURO—and a 10-string machine of an older type. It wasn't long before the ENDURO machine "showed up" its old-fashioned neighbor. For, within a short time, the 10-string machine was replaced with one made entirely of ENDURO . . . shown at the left. Now both machines are thoroughly modern . . . stainless, easy-to-clean, and with a smooth, hard surface which protects the product and assures true colors. Every dye plant will be interested in the complete story. Write Republic for full data. » » » » » » » » » » » » » »

REPUBLIC STEEL

Republic Steel CORPORATION

ALLOY STEEL DIVISION, MASSILLON, OHIO

GENERAL OFFICES: CLEVELAND, OHIO

When writing in reference to this advertisement please address Dept. C

ENDURO

REPUBLIC'S PERFECTED STAINLESS STEEL

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FEB 19 1936

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COTTON

Vol. 100 **FEBRUARY, 1936** No. 2

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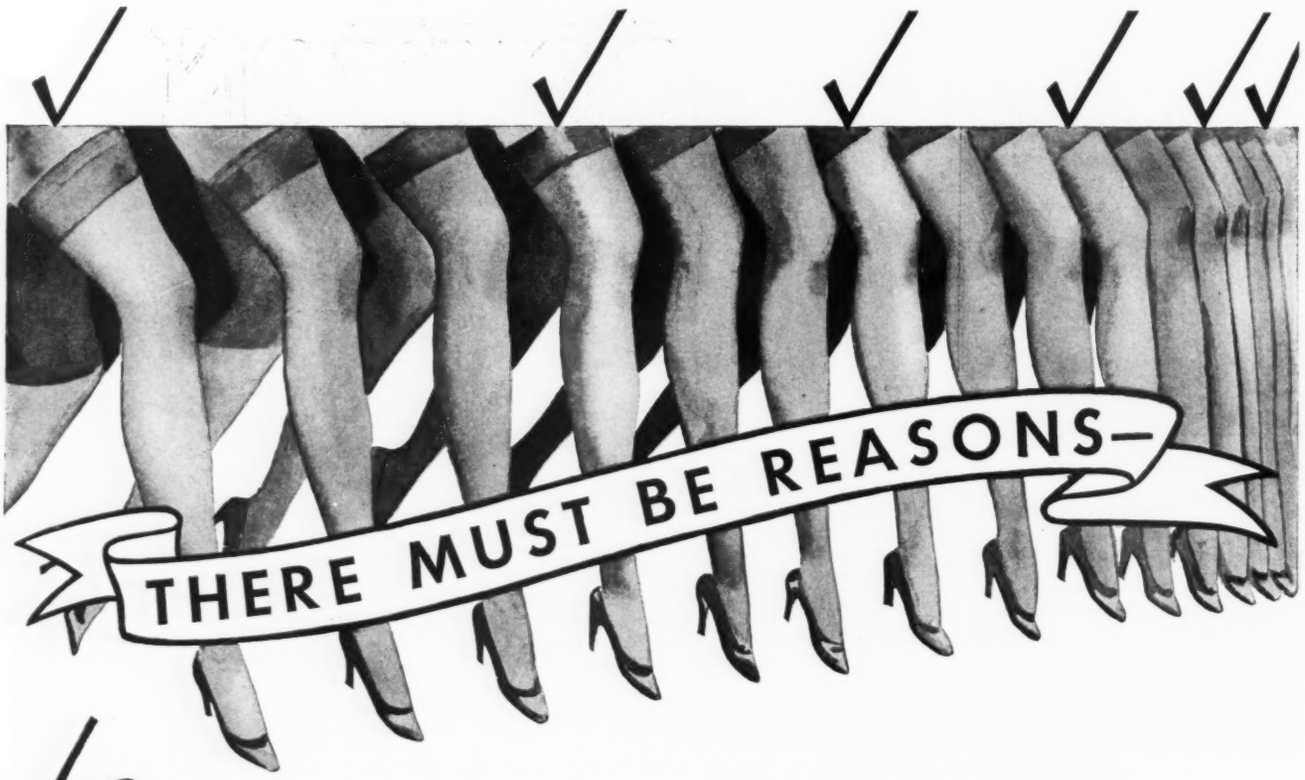

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Vol. 100
No. 2

COTTON

February,
1936

Modernization and Maintenance

EVERY mill has a depreciation account. It may never have been brought into the office and formally introduced to the books, but it is there—out in the plant—working night and day against you; getting fatter and fatter as the years pass by. Once a year, particularly, COTTON tries to remind you of this and help you think up something to do about it. In the issue of February 1935 were several examples of what certain leaders were doing to demonstrate and maintain their leadership. The current issue features Maintenance.

Modernization is getting up-to-date—Maintenance is keeping that way. The textile industry is apparently pulling out of a period when profits were nil or minus, during which Maintenance often was forgotten or confused with Repairs. There is a sharp distinction. The dictionary defines Maintenance as "holding or keeping in any particular state". Repair is defined as "to restore to a sound state; mend; restoration, as after injury". Maintenance is not a matter of keeping things patched up enough so that they will not fall to pieces; it is a matter of keeping machinery in a certain particular and desirable condition. New machinery, when properly maintained, stays practically new until it becomes obsolete.

A great many smart people, instead of calling a doctor when they are sick, will hire one to keep them from getting sick. They believe in Maintenance as being superior to Repair.

The year 1936 seems to offer more promise to the textile industry than the year just closed. Improving business should handsomely reward those who were wise enough and courageous enough to risk improvements and take care of thorough Maintenance during the past five or six years. Idle factories, empty houses and jobless former employees are scattered throughout the industry—an eloquent testimonial to the futility of trying to keep a plant running after it is no longer fit to run, and of resolutely refusing to keep it fit during the years when there was plenty of money to do so.

Every textile corporation cannot have a new mill or replace all of the machinery in an old one, but it requires very little more than interest, industry and enthusiasm to keep what you have substantially as good as it is, rather than trying belatedly to make it as good as it was.

In Modernizing Our Practices, Shall We Adopt

MAINTENANCE OR REPAIR?

A cogent discussion of maintenance, and an outline of how an adequate system of inspection and maintenance may be developed for any type of textile plant

CONDENSED into this brief discussion is the outline of the maintenance methods of an outstanding group of southern mills. It reflects and indicates the broader program of functional operation which the author has instituted.

In this article, prepared especially for this Modernization and Maintenance Issue of COTTON, Mr. Callaway has limited the discussion to the specific theme of maintenance, and describes clearly a simple yet effective procedure of up-to-date, systematic inspection and maintenance of textile plants and equipment.

While the discussion and illustrations are based on a procedure for multi-plant management, the principles and procedure are equally applicable to the individual plant, regardless of its character, size or personnel, and particular problems . . . . .

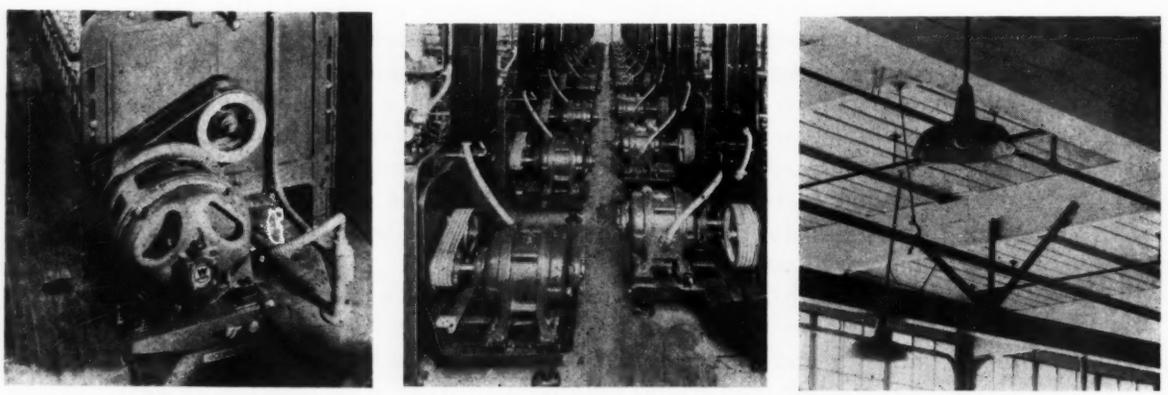
By **FULLER E. CALLAWAY, Jr.,** President and Treasurer, Callaway Mills, LaGrange, Ga.

I DO NOT KNOW whether the general conception of maintenance coincides with my own. I do know that to my mind there is a definite and distinct difference between maintenance and repairs. With maintenance conducted in the proper manner there are no repairs except in case of emergency. In other words, maintenance, a continuous function, replaces repair, a continual function.

The difference between maintenance and repairs is similar to the difference between a man who has a bath every day to *keep* clean and a man who takes a bath once a week to *get* clean. This distinction as to bathing has for some years been recognized by most mill managers, but, unfortunately, has not been applied to their property upkeep.

A necessary ally to maintenance is inspection. By inspection we mean not merely giving a casual, occasional look at some of the equipment or buildings, but following a regular predetermined schedule which is so arranged that each part of every machine and each square foot of every building is carefully examined well within the depreciation cycle for that particular piece of equipment or part of building. For example, it is necessary to examine the parapet walls on the roof of a brick building only twice a year (if they are properly constructed) in order to detect any trace of deterioration in ample time to correct it and thus avoid any trouble. But with sprinkler pipes, an examination must be made once every two weeks.

The first step to take, and a very important one, if it is decided to change from a repair system to a



Different equipment and parts of buildings require different maintenance schedules. Motors should be examined on one schedule, sprinkler pipes, etc., on another. But it is possible to predetermine a schedule for each so that each part of every machine and each square foot of every building is carefully examined within its depreciation cycle . . . . . .

A recent photograph of Fuller E. Callaway, Jr., in his office at LaGrange

The organization headed by Mr. Callaway embraces seven plants in LaGrange, and four others in other Georgia towns and in Alabama. They are being operated under a new program of plant management that includes many entirely progressive ideas applied for the first time to textile manufacture. Among the features of the program is central maintenance, which is covered in part in this article . . . . . .

maintenance system, is to scientifically determine upon an inspection schedule. This schedule is prepared by first determining the depreciation cycle for various items. For example, suppose we determine upon the following:

Fire Protection System (Sprinkler)
Once each two weeks

Elevators
Once each three months

Electrical Apparatus
Once each month

Buildings
Once each three months

Auxiliary Equipment — Non-Productive
Each two months

Steam Piping
Each six months

Next we determine the necessary facts to be ascertained upon each inspection of each different item. For example, on each inspection of an electric motor the following should be checked:

Lubrication
Clearance of rotor to stator
Resistance of the windings to ground
Condition of bearings
Temperature

It then becomes necessary to determine the length of time required to inspect each item in accordance with the various points as outlined.

With the foregoing facts, together with an inventory of the items in each class which must be inspected, it is a simple matter to lay the schedule out on a calendar (or two or more calendars if more than one inspection is required).

Our completed schedule for the first five days of the year might then look something like this:

Inspector No. 1
January

1st working day Plants A and B
Inspect Sprinkler System

2nd working day Plants A, B, C, D
Inspect Elevators

3rd working day Plants A and B
Inspect Auxiliary Equipment

4th working day Plant A
Inspect Building

5th working day Plant A
Inspect Electrical Equipment

We may then expect a report to be turned in on the afternoon of the first working day in January by Inspector No. 1 something like this:

Plant A Spinning Room
Sprinkler line E-Strap hanger broken
Supply part Catalog No. F-896 needed

The supply man upon receipt of this report issues one supply part Catalog No. F-896 to a maintenance man, together with the report showing location and trouble with the sprinkler line. The maintenance man goes to the indicated location and replaces the defective part.

On the afternoon of the fifth working day a report might be made by the Inspector as follows:

Plant A Card Room
Motor No. 571—Replace bearings

Spinning Room
Motor No. 565—Varnish and bake winding

The supply room man upon receipt of this report will look up Motors No. 571 and No. 565 in the card index, to find that they are both ½ horse power, 1,800 r.p.m. motors. He then issues two "spare" motors of this same rating to the Electrical Crew who makes replacement and turns in the old motors, which go to the Maintenance Department to be rebrushed and baked respectively.

"Does it work?" you ask.

As a specific example, I know of a mill which has cut down its motor burn-outs 74 per cent under such an inspection system.

An Engineer Discusses the Means of Adequate

Maintenance of Mill Buildings

BUILDING maintenance probably receives everywhere too little attention in relation to its importance. Mill executives who spend time and money on new equipment, and properly so, are too often, in regard to the buildings, like the Arkansas Traveler who said he didn't need to repair his roof in pretty weather, and couldn't do it when it was raining.

This article cites examples of how money can be saved, and efficiency served, by proper, systematic attention to the floors, roofs, windows and doors and walls of the plant buildings, and by a definite program of painting.

A second article, continuing the subject of maintenance as applied to the mill village, will appear in an early issue . . . . . .

By A. J. COOPER

Manager, Construction Department
Robert & Co., Inc., Atlanta, Ga.

WHEN WE have occasion to call to mind the destructive phases of Nature's activities, we are likely to visualize such phenomena as fire, floods, earthquakes, and windstorms, which are of a spectacular character, and are violent and sudden in their action. Since such forces as these might destroy his plant in a few hours, the mill owner is probably justified in the considerable sums of money represented in protective devices and insurance policies.

But there are various other agencies at work on all structures, in varying degree, causing far greater expense to the average mill than results from the more severe ones mentioned. They are the ordinary agents of depreciation, rust, decay, and all other physical and chemical changes fostered by heat, cold, moisture, and other natural elements. Add the wear and tear due to manufacturing operations and the ravages of such pests as termites, and the sum constitutes a formidable and expensive array of foes that would, within a few years, render a building unfit for use, unless proper measures were used to prevent or combat them.

Mr. Cooper

It is the purpose of this article to discuss some of the worst phases of deterioration and the best means of extending the life of the various items entering into building construction.

Many mill executives, perhaps most of them, being constantly faced with the urgent problems of operating details, costs, and technical phases of manufacturing, seldom give a thought to their buildings. Probably they never think about them, except when a roof leaks badly, or half the porches on their village houses become so far decayed as to be unsafe for occupants, or all the windows on the west elevation have to be replaced. Even then they do not stop to figure up how much cheaper and how much less trouble it would have been if a little more money and thought had been spent in preventing these conditions.

Periodic Inspections Recommended

I believe it would be well worth the trouble and the small expense to any mill executive to have a thorough check up and report, at periodic intervals, on the condition of his properties. This could not be done by means of a casual inspection. Some items of deterioration are immediately apparent, while others become so only after the members involved are practically destroyed. In one warehouse which I visited, the beams were actually on the point of collapse, due to termite damage. In other warehouses, these pests infecting the first floor plank entered and ruined several bales of cloth stored up on the floor, before they were discovered. In one mill, the first indication of the decay in the roof deck was the sudden fall of a large humidifier, due to pulling out of the lag screws. In these and many other cases, the damage would have been slight if it had been discovered and the condition which caused it remedied within a few months after it began. Decay and rust do not work so fast but that a thorough examination at intervals of one year—perhaps two years on some items—would be sufficient for all practical purposes.

Such an examination would really take not a great deal of time. It should be made, of course, by some one familiar with construction work, who would know just what he should look for. The inspections should be followed by a written report giving in detail the condition of each main item entering into the building.

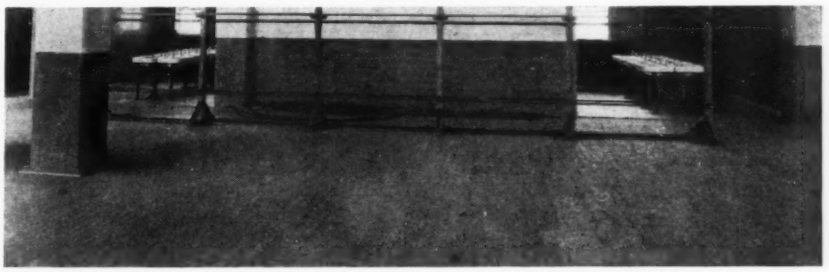
In general, the items of construction which require the greatest expenditures for maintenance in textile mills are as follows: Floors, Roofs, Windows

and Doors, Painting, and Walls. This division is not strictly accurate, since the item of painting is interconnected with the maintenance of almost all of the surfaces. There are also additional items of drainage, piping, platforms, steel stacks, and other miscellaneous structures.

Taking Care of the Floors

The floors in textile plants are usually of two general types, wood and concrete, the latter being used generally in dyeing and finishing plants, warehouses, platforms, etc. Wood floors are used in most manufacturing areas, and are finished in maple, oak, or pine; maple being most commonly used in textile plants.

The natural wear of maple floors is somewhat aggravated by the frequent soap and water scrubbings they need for removing the dirt and grime. The dirt will be easier to remove, and the scrubbing consequently minimized, if the aisles and places subject to wear are filled with one of the inexpensive floor oils which are made by various paint manufacturers. These oils fill the pores of the wood and cause the dirt to remain more on the surface where it is more easily washed off. The oil also prevents the water used in scrubbing from soaking into the wood, where, by softening the fibers it would greatly increase the effect of abrasion by truck wheels and other traffic.



Floors, concrete as well as wood, present constant problems of maintenance which can be solved by the application of the proper methods under each different condition . . . .

This oil coating, which dries over night, should be applied every few months, or perhaps once a year, the intervals being dependent on the amount of wear and scrubbing to which the floor is subjected. The oil is merely swept on with a mop or broom, and the cost of both material and labor is small.

Beyond the occasional coating of oil, little can be done to decrease the wear on wood floors. The replacement of boards, as they become excessively worn, is a matter affecting utility and safety, and most mills are accustomed to taking care of this replacement as it becomes necessary.

What Termites Do to Wood Floors

One of the greatest causes of deterioration of floors, laid on tar rock base on the ground, especially in the South, is the termite. While the current practice of using pressure-treated creosoted lumber for the base of this type of floor will prevent most of the damage from termites, it was formerly the practice to use only a brush or dip treatment, which is not effective. Many of the older mill buildings have floors which are not pressure-treated, and these should be regularly inspected for termite damage, which, if allowed to go on unchecked, may completely destroy the structural strength of a floor, creating the necessity for replacing the entire floor system. Especially should the warehouse floors, if built of wood, be watched, since termites will not stop in the floor plank, but will invade bales of goods which may be stored on it.

Much damage in wood floors on grade is due to fungus growth, fostered by the moisture which comes from scrubbing and from the condensation on the walls, which runs down to the floor. This decay usually starts near the exterior walls, since this area is kept more constantly damp. When it is discovered, the affected areas should be removed immediately and replaced with treated subfloor, since the fungi which cause this rot will spread over the entire floor if allowed to go unchecked.

Maintaining Concrete Floors

Concrete floors are not nearly so easily refinished as wood. For that reason, it is important to use every possible means to hold down the wear. Concrete floors can be built so resistant to abrasion as to be almost wearproof, under ordinary traffic, but the method is expensive and few owners are willing to put enough money in the floor originally to accomplish this result.

The wear in concrete floors can be reduced by an occasional washing of the surface with a solution of magnesium fluosilicate, or one of the chemical surface treatments sold under various trade names. Most of the proprietary brands of surface hardener include either magnesium or sodium fluosilicate, or both, but the crystals can be bought under their chemical name if desired. The treatment material is dissolved in water and washed over the floor with a broom. The solution penetrates only a thin layer on the surface, where it fills tiny voids and "case-hardens" the surface, cutting down dusting and increasing the wearing qualities of the concrete. The treatment is comparatively inexpensive, but must be repeated at intervals of a few months, the length depending on the amount of abrasion to which the floor is subjected.

Repairing the Floors

Old worn concrete floors can best be repaired by the use of asphalt mastic. In general the asphalt mastics consist of a mixture of asphalt emulsion, Portland cement, and sand. There are several brands of this material on the market, and the recommendations of the particular manufacturer whose product is being used should be followed. Refinishing the floor with a cement finish is possible, but is rather expensive. It must be applied over the entire floor, or at least a large section, and for satisfactory results should be applied by experts in this class of

work. The asphalt mastic has the advantage that it can be applied in small individual areas, and "feather-edged" out, rather than having the necessity of chipping the edges of the holes down square, as is necessary if it is desired to refinish with concrete.

Worn wood floors can also be refinished with asphalt mastic, by introducing a wire mesh or expanded metal re-inforcing fabric. This can be put over the entire floor, or, if desired, only the aisles refinished. Since refinishing with mastic laid over the old finish floor will raise the floor level a little, it should be noted that if only the aisles are refinished, the floor under the machines will be lower than the aisles, a detail which has some undesirable features.

In the case of dyehouses, bleacheries, etc., especially if the floors are occasionally subjected to hot water, it is advisable and quite practical to refinish concrete slabs with cement finish, rather than patch with mastic. If it is desired to put a new cement finish on an old slab, an experienced cement finisher should do the work. It is best also to obtain and follow carefully a detailed specification which is too long to publish here, as any departure from specifications which have been tested on other jobs may result in the new finish not bonding to the base slab, in which case the expense of refinishing has been practically wasted.

Deterioration in roofs causes the largest part of damage to buildings. It is regrettable that the most exposed area of a structure should have to be covered with so temporary a material. Practically all roofs on textile plants are of the "built-up" type, that is, they are built up of several layers of a bituminous material, either asphalt or coal tar pitch. All these materials contain volatile oils, which give them their pliability or their ductility, and their waterproofing qualities. The heat of the sun naturally tends to cause these oils to evaporate, leaving the residue hard and brittle. When this occurs, the felt soon cracks and causes leaks.

Taking Care of the Roof

The two most commonly used types of built-up roofs are the tar and gravel, and the asphalt, smooth surfaced roof. The former employs tar saturated felt, with coal tar pitch between, and a layer of pitch, covered with gravel, on top. The asphalt smooth surfaced roof is made up of asphalt-saturated felts with layers of asphalt and usually a coating of asphalt on top.

The nature of the tar and gravel roof prevents much being done in the way of maintaining the roofing itself. Care should be enforced in the matter of physical abuse of the roof, since it is easily damaged by traffic over its surface. The flashing should be inspected frequently and repaired when necessary. Owners should note that most roofing bonds and guarantees do not cover the flashing, and it is up to them to maintain this portion of the roof. For this reason, it may save the owner trouble and arguments if he will keep the flashing in good repair. The base flashing, if made of felt, can be re-coated at intervals of two or three years. If metal, the joints should be kept soldered, and care taken that it is not lifting up or otherwise damaging the felts at the roof line. The cap flashing should be kept carefully calked where it enters the wall, and wedged tightly to prevent its becoming loose in its groove.

A smooth surface asphalt roof can be maintained, and its life considerably extended, by re-coating at intervals of three to five years. Ordinarily, when installed these roofs are given a surface coating of asphalt. In the course of a few years, this surface coating hardens and cracks up, or "alligators", so-called because of the resemblance of the surface to an alligator's hide. When this occurs, the felts are partially exposed to the elements, and soon deteriorate. The roof should be re-coated with a hot or cold

Photograph made at a textile mill, showing expensive deterioration set in because of lack of maintenance . . .

roof coating, which will preserve the surface and prevent decay of the felts.

Of course it may be a little difficult to see the point of maintaining a roof which someone else has guaranteed to stay watertight for 20 years. However, as a roof becomes old, it may begin leaking some time before the leaks start to show up, and the roof boards and beams will be soaked, until rot sets in. It is frequently the case that an owner finds that in addition to needing a new roof, his building is going to require almost a new roof deck, an item which usually costs much more than the roofing itself. Replacing plank and beams is an expensive job, and the avoidance of it is well worth a few barrels of roof coating.

Taking Care of the Windows

Sheet metal gutters on the edges of overhanging roofs, as well as all other sheet metal work on the exterior of the building, unless of copper or other non-corrosive metal, should be painted frequently. But the outside of gutters is not where most of the rust starts. It is more important, from a maintenance standpoint, to paint them on the inside, and they will last much longer if they are regularly cleaned out and a coat of metal protective paint applied.

One source of expense to the mill owner, which is brought to his attention at infrequent intervals, but sometimes proves costly, is the windows. In a modern plant, the windows are frequently over 50 per

cent of the wall area. They are either wood or steel, usually the latter in plants built in the last 15 years. Since replacement of windows is an expensive and inconvenient operation, it will pay for any plant to minimize their deterioration, provided it can be done at a reasonable expense.

The greatest factor in cutting down decay and rust, outside of proper design, is, of course, a coat of paint. It seems hardly necessary to stress the importance of painting, yet this item is frequently neglected until the surfaces have actually begun to show signs of decay. The general subject of painting being covered later in this article, we will discuss another point or two affecting the rapidity of deterioration of windows.

The first item is that of glazing. Old putty which has hardened sometimes opens up little cracks between the glass and the putty, allowing the water to collect and stand against the wood or metal forming the sash. This water will result in decay or rust starting under the putty, soon seriously damaging the sash. If the hard, cracked-up putty were scraped off, and fresh putty applied, the life of the sash would be materially increased.

Another illustration of what deterioration and weather damage did to improperly maintained mill structure . .

The second item to look after in connection with windows is the calking at the masonry jambs. If wood frames are not properly calked, water will leak in behind the frame, and cause rot to develop. If steel sash are not properly calked, moisture seeping into the masonry will rust the metal. The brick molds on the outside of wood frames should be removed every few years, and, if necessary, a little fresh calking compound applied, and the mold replaced. The steel window jamb is easily calked, without the necessity of removing anything.

A third point which has caused much rusting of steel windows concerns a defect in the design of some of the factory sash. The sill section at the bottom of the ventilated sections of some makes of steel sash are so designed as to catch and hold the water which condenses and runs down the inside of the window in the winter time. This water stands continuously in the ventilator sill section, where it promotes and accelerates rusting, until the entire sash is ruined by the destruction of this principal member. The difficulty can be avoided by examining the sash to see if the water has a means of draining out. If not, provide two or three narrow slots in the upstanding leg of the steel member which retains the water. These slots will allow the water to drain off. And this section of the sash should be kept especially well painted.

The Painting Program

The item of building maintenance, the value of which is most generally recognized, is paint. Everyone will agree that re-painting at intervals is necessary, for the effects of neglect of this point are so apparent, both in the appearance and in the resulting decay.

One thing frequently neglected in re-painting jobs is the cleaning of the surfaces before painting is begun. On the interior it is not usually sufficient merely to blow off the lint and dust with an air nozzle. This is a good prelude to the real cleaning. This should be done by brushing thoroughly with a fiber brush, after which any oil or grease spots should be removed by washing with gasoline. If oil or grease is allowed to remain, it will cause yellow spots in the finished job.

Any loose or peeling paint should be removed. Wire brushes will take off all except that which is adhering fairly well. It is doubtful whether the expense of removing old cracked paint by scraping would be justified. It would be my recommendation to remove all that will come off with wire brushes, and paint over the rest. It is a mistake to leave loose particles of paint on the surfaces, as they will spoil the new paint job by coming off later.

In my opinion painting in a large industrial plant should be placed on a routine basis. By that, I mean that a certain amount should be done every year, sufficient in area to complete the entire plant within the useful life of the paint film. This would vary with the surface, the weather, and the quality of paint used, but for outside work in the South, especially on wood surfaces, the interval should not be greater than five or six years.

The reasons for establishing an annual painting routine are two-fold. First, the work is accomplished with much less inconvenience on the part of the plant. Only a few men, possibly only two are working and only a limited area is affected at one time. Second, if left to be done every few years, there is too much tendency to neglect it, until the surface is in such a condition as to make the proper kind of job difficult and expensive.

The Brick Walls

Of all the various exposed parts of a building, brick walls are the least affected by the elements. But even these are not entirely immune from deterioration. Especially is this true of brickwork containing soft, or under-burned brick, as many walls do. These softer brick are more porous, and soak up moisture readily. Alternate freezing and thawing results in spalling of these brick, which may progress until

eventually the individual brick are entirely gone.

If these brick are on the outer surface, the only remedy is to cut them out of the wall and replace with good brick. A colorless waterproofing may be applied and repeated every year or so, and this will prevent the trouble, but good hard brick are the better investment. When the brick occur on the backs of parapet walls, they may be protected by a coating of asphalt emulsion. If this or other coating is used, it should be remembered that it will not last forever, and should be examined at intervals of one or two years, to see whether the film has become broken and water is seeping into the wall.

The walls of many warehouses are built of wood studs and siding. While the right painting program is the most important factor in the maintenance of an exterior wood wall, there is another point or two worth watching for. One is termites, which have already been mentioned in connection with floors. These pests can be readily discovered if the wood wall rests, as it should, on a masonry curb extending some 12 inches above the floor. The termites then are forced to build their earthen tunnels over the curb to reach the wood. Being thus forced into the open they can be detected and their tunnels destroyed, and the insects themselves killed by the application of one of the standard chemicals used for this purpose, such as orthodichlorobenzene, or creosote may be used to prevent their regaining access to the wood.

In connection with the re-painting of exterior wood walls, care should be taken, before re-painting, to re-nail the siding where necessary, and calk up any cracks. Boards that are split too badly for calking should be removed and replaced with good plank. If this is not done, water enters through the cracks, runs down inside the wall, and rots the framing and perhaps some of the siding. Cracks between the ends of weatherboards, if wide enough to admit water, and open knot-holes, may be covered with small strips of sheet metal, although it is a better looking job to remove and replace the board. The metal strips should extend up under the weatherboard above to be effective.

A thorough examination would include all the building features mentioned, as well as a few others of somewhat less importance. For instance, outside drainage ditches should be kept open and free flowing. Wire fences, when they become old, can be painted to advantage. Outside wood platforms are frequently allowed to become dilapidated. It will be found in most cases that repairs, if made early enough, will be cheaper than replacement. I believe that any owner will find that he is repaid for his time and expenditure in keeping the repairs to his plant up-to-date, and in making this activity as nearly as possible a continuous one, instead of a major operation every ten years.

And there are intangible benefits resulting from keeping buildings in a first class state of repair. There is undoubtedly some beneficial psychological effect on employees who work in a well lighted and painted building, the floors, windows, toilets, etc., of which are kept clean and in good repair. There will be little argument, I am sure, about the short-sightedness of ignoring this work until it becomes an item which enters the realm of major expenditures.

(A second article, dealing with maintenance of the mill village property, including the village houses and other buildings, streets, lighting system, etc., will appear in an early number.—The Editor.)

Textile School Heads Meet

In furtherance of the work of the Textile Foundation, the committee of the heads of the textile schools met in Washington recently. In the past, a study of carding was made by H. H. Willis of Clemson College with the assistance of the other textile schools. The committee of deans from the schools agreed to continue with similar material this year on subjects of cotton classification, opening and picking, drawing and roving frames, combing, and spinning. The text is expected to be complete by the fall of 1936. The deans are especially interested in the field of textile economics and it is expected that material will be collected upon which to base a study of this phase of the mill industry. Those attending the meeting in Washington were: W. D. Fales of the Rhode Island School of Design, Providence; Henry W. Nichols of Bradford-Durfee Textile School, Fall River, Mass.; C. A. Jones of the Georgia School of Technology, Atlanta, Ga.; H. H. Willis of Clemson College, S. C.; F. M. Feiker, acting for the Foundation in correlating the work; and E. T. Pickard, secretary and assistant treasurer of the Foundation.

Interesting Report on Kemp

Kemp is a very misunderstood fiber, according to G. Gordon Osborne, a fellow of the Textile Foundation, in an article published in the January issue of *Textile Research*. Contrary to popular thought, explains Mr. Osborne, there is a definite scale formation on the surface of the fiber that completely encases it. The scales are smoother and project less prominently than on wool, nor do they overlap as on the animal fiber. In kemp, the medulla is filled with air and this causes the difference in appearance with wool when it is dyed. However, Mr. Osborne has shown that when the air is expelled from the medulla that wool and kemp may be quite equally dyed and the penetration and affinity are very similar.

Device for Measuring Stiffness of Yarns

Dr. Irving J. Saxl has developed a device for measuring the stiffness of treated and untreated yarns that is especially valuable for determining the effects of size mixtures on them. It works on the principle of determining the force necessary to bend a piece of yarn through various angles. The method lends itself to the determination of the modulus of elasticity.

Casein Wool Deficient

According to a report from the Rome office of the Bureau of Foreign and Domestic Commerce and published in the January issue of *Textile Research*, the chemical components of the new "synthetic wool" may be accurate but it will take a careful scientific analysis of the physical characteristics before the term "synthetic wool" can be applied with merit. Several tests were made with a limited sample and the physical qualifications indicated that it was different from the natural fibers.

THE MILL LABORATORY

Practical Research and Accurate Testing are True Functions of Real Maintenance

By H. D. EVANS

Director of Research
Pepperell Mfg. Co., Biddeford, Maine

THE primary purpose of our mill laboratories is the control of mill processes. In the course of such work the causes of defective operations are necessarily discovered, and attempts to remedy them are made. Thus, as correlaries of the primary purpose of the mill laboratory, arise two other secondary purposes, namely, investigation of defective manufacture, and research and study to correct the cause of such defect. The latter factors are, in the majority of mills, subordinate to the primary aim of the laboratory, and have been in the nature of secondary developments.

The author at the microscope

Laboratory control came to the textile industry much later than it did to most of the major manufacturing industries. Steel, the various metallurgical industries, pulp and paper, ceramics, the electrical, combustion and power industries early learned the value of laboratory control and of experimental work, while the chemical industries were founded upon, and grew to their present predominating position as the direct result of, pure research and of strict laboratory control of their operations.

The cotton industry was the first of the textile industries to seek to apply laboratory control and research to their problems. The greater part of the pure research work in textiles has been carried out by machinery manufacturers, and in the laboratories of various scientific educational institutions which have received money grants from the industry for that purpose or are maintained for the training of students in the textile industry. Few, if any, textile plants maintain either laboratories or staffs of such size and equipment as to permit of the undivided and uninterrupted attention that is required for pure research. Neither is textile management possessed, as a rule, of the necessary patience needed to achieve results in pure research.

While cotton was the pioneer in laboratory control and study, it is now far surpassed by the synthetic fiber industries, but is still in advance of both of the animal fiber industries, namely, silk and wool.

Textile plant laboratories, therefore, devote their attention mainly to: (a) the control of the raw materials entering into the manufacture of their products; (b) keeping watch over all manufacturing processes to see that the organization's standards of quality, strength, and appearance are maintained; (c) studying and checking against present results, the results obtained from new methods, and from modifications of present methods arising either within their own organizations or elsewhere in the industry; (d) studying and investigating the causes of all defects that they may themselves detect in their own goods, or which may be brought to their attention through complaints of customers, so that the actual causes of the complaint or fault may be located and removed.

And in this latter field a mill should welcome and encourage the submission to it of all complaints that can be accompanied by defective material. The study of such material has resulted, in our case, in the elimination of many a defect that would otherwise have passed unnoticed by the mill, and has resulted in better quality of merchandise and, in the majority of cases, in greater customer confidence. This kind of work is not always conducive to a be-

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THERE is perhaps no greater adjunct to adequate maintenance of quality, efficiency and economy than the true functions of a mill laboratory. It is entirely fitting, therefore, that a discussion of this work appear here. This article tells in detail, and in practical language, how the laboratories of a leading mill organization function, profitably and cooperatively, with the manufacturing division.

The difference in the requirements of mills, large and small, as to laboratories, is entirely one of degree and not of kind. Any mill executive, regardless of the size or character of his plant, will find much of practical value in this discussion, which cites the need of intelligent investigation, and reports the practices and results of a leader in the field . . .

A view of the Pepperell physical laboratory

lief in the honesty of the human race, as many individual purchasers return to the manufacturer goods not of his manufacture with the claim that they are made by him. This is especially true in the case of goods that carry a guarantee, and the laboratory must always be so well acquainted with its own merchandise that it can recognize the products of its own mills.

In the case of an organization such as ours, such process control and knowledge of our goods is of the greatest importance as we are producing quality goods in quantity and under nationally advertised brands. Such merchandise is under constant scrutiny by competitors, and so no deviation from our standards is permissible.

Thus the work of a mill laboratory involves physical testing, chemical testing, microscopic and microphotographic study of raw materials, of materials in the various processes of manufacture, of the finished product as it leaves the mill or, if the finishing operations are performed elsewhere, of the ultimate finished product. It also, of necessity, involves the application of the results of such study to the improvement of manufacturing processes in the mill itself.

The Physical Testing Laboratory

The physical testing in a cotton mill may properly start with the cotton itself. Most mills have in their organizations a competent cotton man, whose experience usually surpasses, or at least equals any mechanical device for grading and assessing the staple and the quality of the cotton. Even here, however, modern investigations with polarized light have shown that assistance can be rendered him in the detection of dead and immature fiber that cannot be estimated by eye or hand.

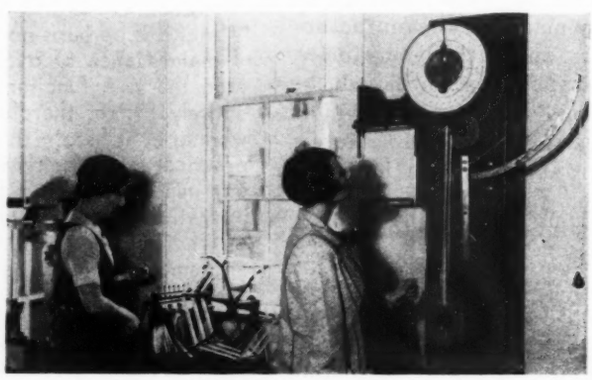
A physical testing laboratory must be operated under uniform conditions of temperature and humidity if its results are to be comparable at all times. To this end the laboratory room must be equipped with the best of temperature and moisture control. Such a laboratory keeps daily check on the various rovings and yarns that the mill produces to see that they are up to its standards in weights, twists, and strengths. When similar yarns are made in various rooms the cause of one room's superiority over the others can be determined, with the result of bringing the poorer rooms up to the standard of the best one through duplication of the conditions that are giving the superior yarns. This will result in evener yarns throughout the mill and in smoother running work after the yarns leave the spinning rooms.

This laboratory checks sized warp yarns for moisture and size content, for elasticity and breaking strength, and for the amount of stretch that the slashing operation has removed from the yarns. These results, checked against the time studies of these same warps in the looms, furnish the basis for changes in size compositions and slasher speeds. In this laboratory the grey cloth is tested for breaking strength, for count of yarns, for pick and sley, and for weight, so that we may be sure of the product of our looms being of correct construction and weight. This is of particular importance in starting up new styles and constructions, and makes possible any necessary changes before the goods actually enter into production.

To this laboratory come also the finished goods from the bleacheries and finishing plants to check against our standards, and to see that they have not been injured in the various chemical and mechanical processes to which they have been subjected. Here also come all new rovings and yarns resulting from the numerous new methods of drafting or of machine changes in roll speeds, twist multiples, or other changes that are always under investigation in the mill.

The Chemical Laboratory

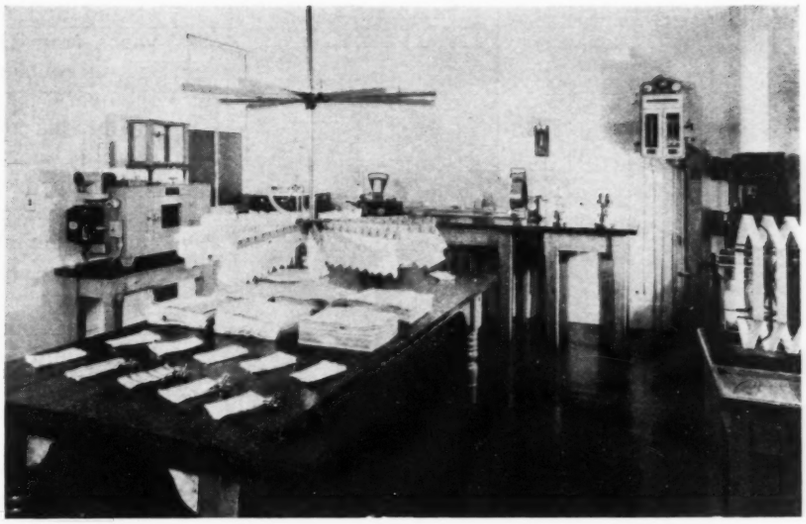
In an organization such as ours, which purchases a large yardage of different constructions for conversion purposes, all constructions under consideration for purchase pass through this laboratory for analysis, and, on the results of such analysis, the conversion department makes its decision as to accept-



Sizing and testing the breaking strength of yarn

ance or rejection of the offerings of merchandise.

Another important duty of such a laboratory is the analysis of competitive goods of all kinds, not only to find out where we may excel but to find the more important points where we are excelled so that we may correct that deficiency. All of this work involves an immense amount of routine testing such as yarn numberings, skein breaks, single end breaks, cloth breaks, twist counts, cloth abrasions, moisture determinations, size determinations, the estimation of finishing materials, of color and bleach fastness properties, and the determination of cloth constructions. In one series of sheeting tests, over 60,000 individual tests were involved, extending over a period of six months.

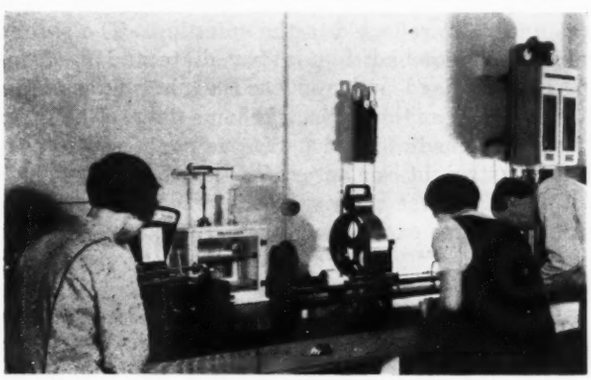


Another view of the Pepperell physical laboratory

To the chemical laboratory come the various mill chemicals, oils, starches, fats, dyes, drugs, and chemical supplies that enter the plant, together with the actual control of the dyeing and bleaching departments, involving the establishment of dyeing formulae and dyeing methods on a practical working basis in the mill itself, together with the development of dyeing methods and all color matching, whether in straight dyed shades or in blends. Complete control of the dyeing operations lies in the laboratory, the head of the laboratory being also the head of the dyeing department.

The laboratories also assist the mill management in the investigation of responsibility on disputes that may arise between our organization and others from whom we may purchase, or to whom we may sell material that may come into dispute. This very essential service is available to all the units of this company.

The laboratories also offer assistance to the purchasing department of the organization. Not only are the raw materials and supplies examined as they come into the mill but they also assist in the formulation of specifications of a standard nature for these materials, so that the seller is not left in doubt as to the exact character of the supplies that are being purchased from him, and so that we may be sure that nothing will reach the manufacturing organization that will upset production schedules or give goods that will fail to pass inspection.



Operating the roving tester and twist counter

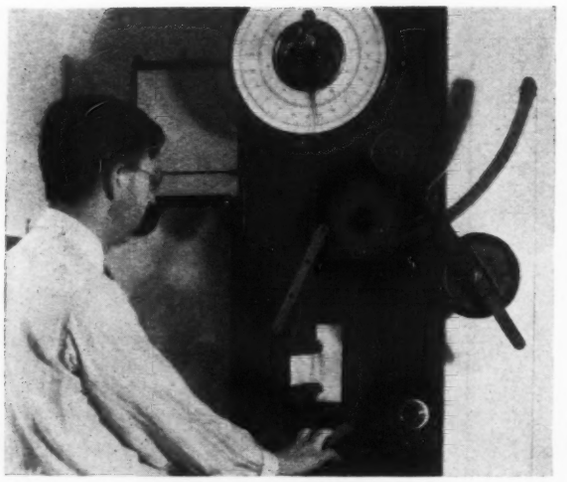
Thus it will be seen that by maintaining close supervision of raw materials, of materials in process of manufacture, of finished goods, and by accurately knowing what our competitors are doing, the laboratory is an indispensable aid in the production of goods of high quality, in maintaining this quality, and in processing as economically as possible. The mass of data accumulated in this regular routine work of the laboratories furnishes the starting point for many changes in constructions and processing methods that result in improved quality goods, and often in lower costs of production.

Equipment Used in Laboratory

The equipment of the physical testing laboratory comprises, in addition to the latest type of Parks-Cramer humidity control, Scott yarn and cloth testers, Suter single end break testers, M. I. T. cloth abrasion machine, Belger roving tester, Emerson conditioning oven, twist counters, yarn and roving reels, boarding reels, grain scales, and revolving racks for the suspension of skeins and cloth samples during the period in which they are attaining their regain.

The microscopic laboratory is equipped with both a Spencer, and a Bausch & Lomb microscope of standard model, with eyepiece and objective combinations capable of magnification up to 600 diameters. Polarizing equipment is also available for these instruments. A wide field binocular microscope is owned, together with numerous magnifiers of lower power for various operations such as cloth examination and analysis. The laboratory possesses a Bausch & Lomb photomicrographic camera, analytical balances of the chainomatic type, electric drying ovens, and heating units, sectioning equipment, and the whole range of minor accessories that go to make up the equipment of a microscopic and micro-chemical laboratory. A dark room is provided to take care of all work involving the use of the camera.

The chemical laboratory is operated in connection with the dye-house, and separately from the physical and microscopic laboratories. It is equipped with



Testing the breaking strength of cloth

miniature yarn, beam and stock dyeing and bleaching machines, built to the same scale and capacity ratios as are the standard machines in the dyehouse itself. As the result of a large amount of experimental work it is now possible to transfer formulae direct from the sample machines to the actual full-sized dyehouse equipment. This has been possible mainly through building formulae based on densities of dye and bleaching liquors. In addition, this laboratory contains the regular chemical equipment required by a general chemical testing laboratory which must exercise control over dyes, drugs, and the many chemicals that enter into our various manufacturing processes.

A Typical Day in the Laboratory

A typical day's work in the testing laboratories will run somewhat as follows: The day may be considered to begin at noon, when the physical laboratory receives from each spinning room seven bobbins of the current day's production of all of the yarn numbers under process in that room, together with two bobbins of roving from such a number of frames —slubbers, intermediates, and fly frames—as will permit all of the frames being gone over every three weeks. With these are delivered the necessary number and variety of roving bobbins to permit the entire range of frames being tested on the Belger roving tester once in two months.

The yarns are reeled off in 120-yard skeins, marked, suspended on the revolving reels and conditioned over-night at 70 degrees F. and 65 per cent relative humidity. Twelve-yard reeling of the various roving samples are made, marked and piled loosely on the tables and conditioned, as are the yarn samples. Twice each week samples of the product of the grey cloth from different looms are submitted. These are cut into 4x6 inch pieces—five warp and five filling pieces from each sample piece—and conditioned as is the yarn and roving.

On the following morning, the conditioned yarns are numbered and broken; the rovings are numbered, the cloth samples broken by the grab method; single strand breaks and elasticity tests run on certain yarns that are under special examination; and single strand and elasticity tests run on the sized warp yarns from the various slashers. The Belger tester is run continuously all day, and the graphs sent to the overseers involved. Reports on the yarn and roving breaks and numberings go to the various overseers as soon as made. If any unusual condition is noted, the overseer is telephoned at once. Cloth samples that are being broken are also weighed, and counted for sley and pick, and the weaving overseer notified of any unusual or faulty condition found. By noon time the routine physical testing work of the day is over, and the next day's samples are coming in and being prepared. In the vicinity of 500 routine tests pass through this laboratory each day.

In addition to this routine work, we continually have miscellaneous samples for similar testing coming from special tests being run in the mill, from material from the conversion department, from material from the finishing plants, and from various investigations into complaints and concerning matters into which the laboratory is digging for information to correct some local difficulty that may have arisen.

Meanwhile in the microscopic laboratory, samples of warp yarns are being cross-sectioned and examined for size penetration. Size box viscosities are being checked; moisture and size determinations are being made on grey goods and from the product of different slashers, varying from day to day, and on finished goods from the bleaching and finishing plants. In the latter case the goods are examined chemically to see whether or not the bleaching and finishing processes injured the fiber in any way.

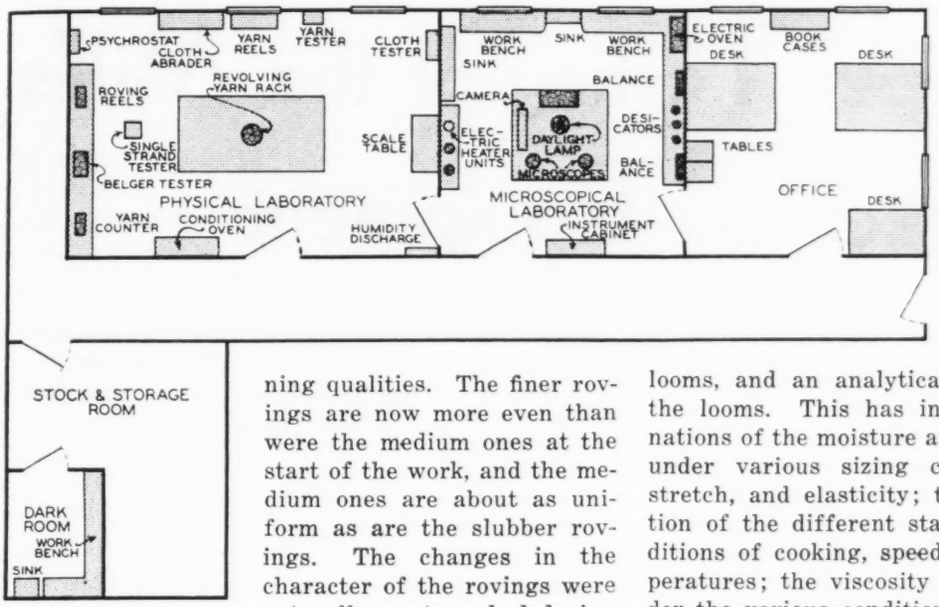
In the chemical laboratory dyes are being tested for money values, fastness properties, and proper methods of application, and routine testing of supplies is going on. Shades are being developed and the products of the various dyeing machines are being matched for shade.

Results of the Laboratory Work

There is room only to mention a few interesting results that have come from the work in these various laboratories. Especially interesting have been the results that have come in the improvement of our rovings, and consequently in our yarns, as the result of the examination of our rovings on the Belger roving tester. When this apparatus was first put into operation practically all of our rovings were carrying too much twist and were too hard. This was naturally reflected in the spinning. The slubber roving was not bad, but intermediate and fly frame roving was hard and uneven, the unevenness being more marked as the rovings became finer. The graph of the intermediate and fly frame rovings was practically a straight line across the very top of the chart, with soft, coarse places interspersed between thin spots carrying excessive twist. Breaks were occurring in the soft coarse spots, both on the tester and in the spinning rooms.

Gradually the twist has been reduced and evened up so that the present graph is a wavy line in the middle section of the graph, and the roving has smoothed out in appearance and improved in spin-

PLAN VIEW SHOWING LAY-OUT OF PEPPERELL'S MILL LABORATORIES



ning qualities. The finer rovings are now more even than were the medium ones at the start of the work, and the medium ones are about as uniform as are the slubber rovings. The changes in the character of the rovings were naturally most marked during the early stages of the testing, and much of the present testing is of a routine nature to maintain the conditions which we have now attained.

Another interesting result of laboratory study—this time in the chemical end—has been the elimination of a notable production loss in the dyehouse in handling one particular type of colored stock. With the particular type of cotton used in one kind of work it had long been almost impossible to obtain even dyeings on stock in full machine loads. To get passable results the machines had to be loaded to but 60 per cent of capacity, with a prolonged boil-out with a chemical mixture that gave us a high boil-out cost for drugs.

As a result of a rather long series of experiments we finally obtained a wetting-out agent that permitted the employment of full-sized loads of this stock and reduced the time of the boil-out to two-thirds of the time required with our regular stocks. Naturally this product was employed with our regular stocks as well as with this particular difficult one. The net result was an increase of 15 per cent in the dyehouse production at a reduced boil-out cost, and a material reduction in both steam and power costs.

As another example of pseudo-research, the laboratory ran a long series of wear and laundryability tests on our own and competitive sheeting brands. This involved over 60,000 individual tests on fifteen brands of sheets, with ten sheets of each brand in the test, and the whole work, which involved 150 laundryings of each sheet in a commercial laundry, covered a period of over six months. Not only did we learn much as to the comparative wearability of the various brands of sheets, but we accumulated information that enables us to very definitely locate the real cause of the damages that sheets acquire in actual use, and steps are being taken to eliminate these causes insofar as they apply to the mill operations.

At the present time we are completing a long series of tests involving a slasher run at high speed. This work has extended over a period of three months, and has involved the study of thick boiling corn starch and thin boiling corn and potato starches under varying conditions of cooking, processed under flannel, rubber -and yarn-wound rolls, at different speeds and temperatures, followed by time studies of the sized warps in the looms, and an analytical study of the cloth from the looms. This has involved laboratory determinations of the moisture and size content of the yarns under various sizing conditions; their strength, stretch, and elasticity; the degree of size penetration of the different starches under different conditions of cooking, speed, squeeze, and drying temperatures; the viscosity of the sizing mixtures under the various conditions of operating; the breaking strength of the woven goods as compared with the regular run of work on our standard speed slashers—the determinations being made on the grey goods as they came from the loom, and after being desized; and many other determinations of a check nature.

These are but examples of the routine work and the attempts at processing developments and experiments resulting from the study of the various data accumulated from the routine work of the regular mill laboratory. It cannot be said that such a laboratory combination as ours does anything more than pseudo-research work from the research standpoint, but the results are often of greater value to the industry than much of the pure research work. This latter is often so theoretical in nature and the investigator so lacking in practical experience of manufacturing operations that the results give little more than a starting point for mill and manufacturing practice, and must be adapted and changed over by the operating force to such an extent that the originator will hardly recognize his child when it appears as an element of actual manufacturing practice. Work in these laboratories is considered of value only insofar as it can be translated into improved processing in the mill itself. This requires that the laboratory force have practical mill experience as well as technical training, so that it can sift the practical from the impractical and be able to apply the valuable parts as aids in improving production and quality.

If mill laboratories are conducted along these lines of control and improvement of manufacturing processes, and of intelligent study of the data so accumulated to correct defects, the mill will achieve greater results through this union of technical control and practical operating experience, each supplementing the other, than it will through the establishment of a laboratory whose main end is the attempt to solve manufacturing problems through the sole field of pure research.

A Function of Modernized Maintenance, and a Means of Power Saving—

The Proper Testing of the Mill's Electrical Equipment

By DELMA L. GERY
Electrical Engineer, The Erwin Cotton Mills Company, West Durham, N. C.

THIS article reflects the modern practice in a prominent group of mills, but the importance of the tests it describes, and the use of the equipment therefor, may be applied as well to smaller, individual units. The possibilities of savings in the power bill, and of increased efficiency, are just as real there as in a large group. This article tells why adequate testing of electrical equipment will save you money, and how and with what these tests may be made, recorded and utilized . . . . . .

IN THIS article I do not claim to be presenting original ideas and methods. On the contrary, by means of personal contacts, magazine articles, and numerous other publications, I have studied the methods and practices of a number of those doing electrical testing in industry, and in practically every case I found something which was applicable to testing in the textile mill.

I think that continuous electrical testing should be carried on in almost every plant for it puts in the hands of the management many facts that it should have concerning three major items—labor, power and maintenance.

At times the morale of the employees may become such that it greatly impairs the operating efficiency of the plant. Offhand, it seems somewhat far-fetched to say that this tendency of the operatives to become lax could be detected by means of electrical tests. Such, however, is not the case; for the load carried by a motor is nearly always a very good index to the performance of these operatives.

Friction Increases Power Bill

The amount of power consumed by a plant is often larger than necessary, due to the friction load being more than normal. If not carefully watched, wear, poor adjustments, irregular and improper lubrication and changes in alignment will increase this portion of the load by a minute amount from day to day until it becomes a far greater percentage of the total load than it should be. Such a condition can best be avoided by making load tests with a recording wattmeter, at regular intervals, and comparing the results with results of previously made tests.

Mr. Gery

In the majority of textile plants the machinery is continually being modified and re-arranged. In far too many cases the electrical system has been given very little consideration. Some motors have been left to carry excessive overloads, while still others have been left with only a small portion of the load for which they were designed.

Even though a plant has not been through a great deal of modification and re-arrangement, it cannot be assumed that all the motors are properly loaded; for in the old days it was customary to select motors larger than necessary rather than take a chance on getting them too small.

The correct load for a motor is a load as near as possible to the full load rating of the motor. A highly desirable condition is to have a load between 100 and 115 per cent of the motor's full load rating. A load of more than 115 per cent will mean a reduced life for the motor, and possibly service interruptions at most inconvenient times. In all cases, when a motor is operating at less than full load, unnecessary capital is tied up and the motor is not operating at its best power factor. It may or may not be operating at its maximum efficiency, for this depends on the type of motor being used.

Modern general purpose motors have practically the same efficiency from one-half load to full load, but for less than one-half load the efficiency decreases rapidly. (See Table I). Motors of less modern design do not have efficiency characteristics quite this good. Therefore, it is even more important that the older type motors be operated as near their full load rating as possible. In most plants it will usually be found that over-loaded motors can be relieved, the over-all efficiency raised, and the power factor of the plant improved by shifting the motors around, re-grouping the driven machinery, etc. For such a change the expenditure required will be re-paid many times by savings in the cost of operation.

Over-Loaded Distribution Systems

Due to the gradual but steady increase in the use of electrical energy, the distribution system may have become badly over-loaded, causing both a waste of energy, by unduly heating the conductors, and bad voltage regulation because of excessive voltage

drop in the conductors. For example, consider a two-wire, No. 4 B. & S. gauge feeder supplying an average load of 70 amperes over a distance of 400 feet. The voltage drop would be 14.35 volts and the power lost during a 16-hour day would be approximately 16 kilowatt hours. For a year of 255 operating days the loss would be 4,080 kilowatt hours. At a cost of only one cent per kilowatt hour (many plants pay more) this would mean that the cost of the power lost yearly in this one feeder would be $40.80.

Suppose that the conductors of this feeder were changed to No. 2 B. & S. gauge. The voltage drop would then be 7.9 volts and the power lost during a 16-hour day would be approximately 8.8 kilowatt hours. For a year the loss would be 2,244 kilowatt hours and the cost of the power lost yearly would be $22.44—a saving of $18.40 per year. (Remember that this saving is based on the one cent charge and that in many cases it will be greater). Assuming that the No. 4 conductors are in conduit of the proper size, they could be removed and the No. 2 conductors pulled in the same conduit. If the regular maintenance men perform this work the chief expenditure would be the cost of the new wire, or about $45.00. The new feeders would pay for themselves in about two and one-half years.

This is not an exaggerated example; in fact, it will be found quite frequently that a larger size conductor will pay for itself much more quickly than the one used as an illustration. The ampere load being carried by any feeder in an industrial plant usually varies considerably from time to time during the day; hence, it is almost impossible to come to an accurate conclusion concerning the average load without using a recording ammeter. With a recording ammeter, however, it is generally quite easy to get a very accurate value. This value, coupled with a knowledge of the power contract, the size of the conductors, and the length of the feeder, places the tester in position to make accurate and valuable recommendations concerning any particular feeder around the plant.

Some Effects of Bad Voltage Regulation

Incidentally, it might be well to mention at this point some of the effects of bad voltage regulation. Excessive voltage on the operating coil of a magnetic contactor causes the coil to heat badly, thereby greatly shortening its life. If the contactor operating under such a condition has a thermal overload relay built into the same enclosure, the heat created by the operating coil during periods of high voltage sometimes causes the relay to trip unnecessarily. The ability of heavily loaded motors to start and carry their loads continuously without over-heating depends upon the voltage being kept at the correct value. A motor which is carrying all the load it can handle will quickly overheat if the voltage is appreciably lowered.

TABLE I—Giving the efficiencies, and the power factor, at various loads for modern squirrel cage induction motors. At the time of writing this article, tables covering the older type motors were not conveniently available

			Efficiency %			Power Factor		
H.P	Volts	Speed	½ Load	¾ Load	Full Load	½ Load	¾ Load	Full Load
5	550	1800	85.0	86.5	86.0	72.0	81.5	86.0
5	550	1200	84.5	86.0	86.0	64.5	75.0	81.5
7½	550	1800	87.0	88.5	87.5	77.0	85.0	88.0
7½	550	1200	85.0	86.0	85.5	73.0	81.0	85.0
10	550	1800	88.5	89.0	89.0	83.0	88.5	87.0
10	550	1200	85.0	86.5	86.0	75.0	83.0	87.0
15	550	1800	89.0	89.5	89.5	84.5	89.0	90.0
15	550	1200	88.5	89.0	88.0	79.0	84.5	88.0
20	550	1800	88.5	89.0	88.0	88.0	89.0	89.5
20	550	1200	90.5	90.5	90.0	79.5	85.0	88.0
25	550	1800	90.0	90.5	90.0	87.0	91.0	93.5
25	550	1200	91.0	91.0	90.0	80.0	85.5	87.5

(Courtesy Westinghouse Elec. & Mfg. Co.)

Another important fact about voltage regulation is that the economy and life of incandescent lamps require the maintenance of a constant voltage at the proper value. A supply voltage of only four volts above the rating on the incandescent lamp reduces its life by 33 per cent, while a voltage four volts below the rating reduces the illumination by 11 per cent. (See Table II).

Tests on Load, Voltage and Resistance

Periodically-conducted tests of load, insulation resistance and voltage are of immeasurable value to the maintenance man. By means of these tests it is possible to prevent a great many troubles. For example, it is a very rare thing for insulation to suddenly break completely down; its resistance generally drops gradually until it reaches some low point where it finally gives way. Regularly-made insulation tests would disclose the approach of such a trouble before it became serious.

TABLE II—Giving the approximate efficiencies of the Standard 115-Volt Lamp when Operated at Other Voltages

(Calculated by means of a Mazda Lamp Characteristics Calculator Supplied by the Westinghouse Lamp Co.)

Socket Voltage	Percent Watts	Percent Light	Percent Life
103	84.5	68.6	309
105	87.0	73.2	262
107	89.5	78.2	219
109	92.2	83.7	182
111	94.8	89.0	149
113	97.5	94.3	122
115	100.0	100.0	100
117	102.8	106.2	82
119	105.5	112.5	67
121	108.3	118.8	54
123	111.2	125.5	43
125	114.0	132.2	35
127	116.9	139.3	29

It is not possible to prevent every trouble but those troubles which do develop are in all cases more easy to analyze when results of previous tests are at hand. Such a condition can be very well illustrated by a motor which gets so that it is continually dropping out, due to operation of the overload relay. One common cause of this trouble is some increase in the load due to poor adjustment of the driven machinery. Such a trouble would be readily located by making a load test and comparing it with

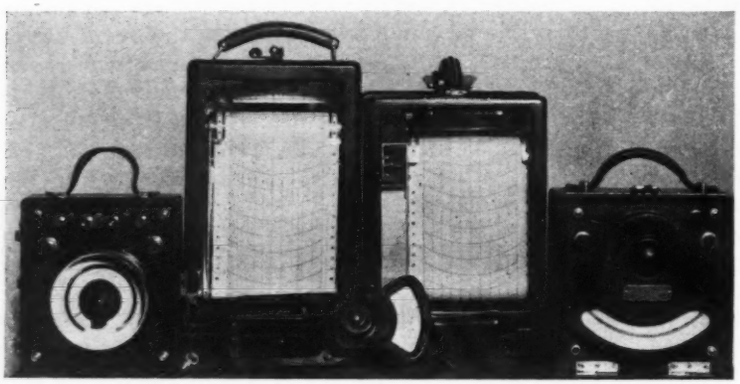
a similar test that had been made previously.

The effects of high and low voltage have been discussed. With these effects in mind it is easy to see that a voltage test quite often will supply the answer to some problem of the maintenance man.

The foregoing portion of this article does not by any means enumerate all the various kinds of tests nor the results that could be expected from them. It is merely a brief outline of the possibilities of a systematic study of the electrical equipment of a textile plant.

Portable Recording and Indicating Instruments Preferred

For work of this nature, I am strongly in favor of portable recording instruments, supplemented by instruments of the indicating type. Of course all instruments must be of very rugged construction. The



Showing some of the instruments used by the author. Left to right: Indicating ammeter, recording voltmeter, clip-on ammeter, recording wattmeter, and indicating voltmeter . . .

number and type of such instruments depend on the size of the plant, the power contract, and, to some extent, on the man who is to do the testing. If the man has had an appreciable amount of experience in this line of work his suggestions concerning the purchase of instruments should be given a great deal of consideration. On the other hand, if a test man is to be developed it is probably best to consult a representative of some instrument maker. These men are usually engineers who are highly capable and eager to see that the purchaser gets the proper service from his instruments. They will gladly outline a profitable plan of testing and suggest the proper equipment.

Equipment Necessary for Electrical Tests

Most medium and large plants should have a recording wattmeter, a recording ammeter, a recording power factor meter, a recording voltmeter, an indicating voltmeter (same range as recording voltmeter), an insulation resistance tester, and some form of indicating ammeter—preferably the clip-on type. It is very desirable that the recording wattmeter and the recording ammeter be equipped with clocks by which the chart can be fed slowly or rapidly, as the test may require. The recording voltmeter and the recording power factor meter will usually be found satisfactory without the rapid chart speeds. If the power contract imposes no penalty for low power factor the power factor meter may be omitted. The voltage and current ranges of the instruments should be such as will adapt them to the voltages and currents of the various lighting and power circuits of the plant. If both alternating and direct current are in use, the instruments and their accessories should be selected accordingly.

Systematic Records Are Essential

In order that the work may be done systematically and records kept in a form so that they can be conveniently used, it is advisable to work out some system of forms and records. Here at the Erwin mills a rubber stamp, simple drawings, and specially ruled and lettered manila file folders are used. It is important that each section of chart taken from a recording instrument be marked so that it can be identified and interpreted at some later date. For this purpose the rubber stamp is most satisfactory. The drawings referred to are simple, single line diagrams showing the power circuits with each motor and piece of electrical equipment given a number. Additional information, such as size of conductors and the horsepower of motors, may also be shown on this diagram if desired. The specially ruled and lettered manila file holders are used as a companion to these drawings. A folder (ruled and lettered as shown in the illustration) is provided for each circuit and each piece of equipment. As soon as a test is completed the used portion of the chart is torn off, stamped, and the blank spaces left by the stamp are filled in. By referring to the chart, the necessary information is taken therefrom and the spaces on the folder filled. The chart is then filed in the proper folder in the file kept for this purpose.

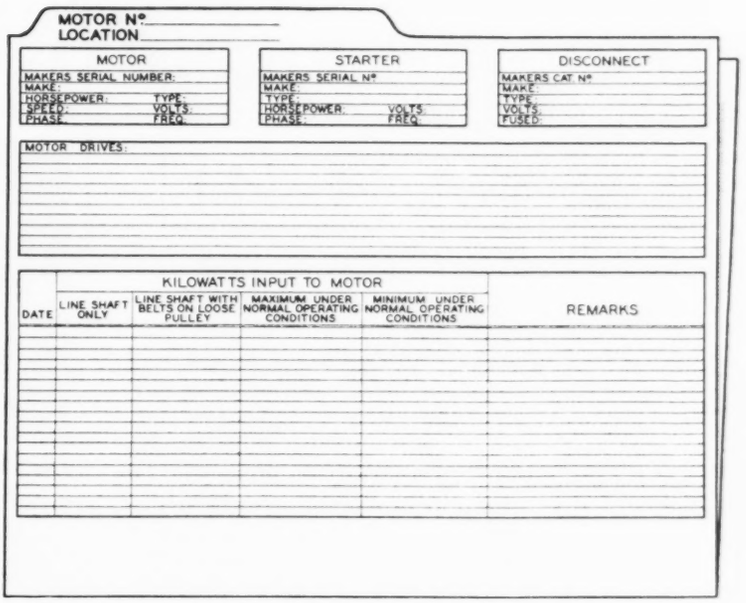
The procedure to be followed in order to obtain and use the data which the instruments named make available is neither extremely difficult nor so very simple. It should be unnecessary to say that all data collected must be very carefully marked to show the date, the location, etc.

A Procedure for the Tests

In most plants it is best to begin by connecting all four of the recommended recording instruments in the main power circuit so as to get information concerning the total load; these should be left in the circuit for at least two weeks, which provides a repeat set of representative day and night curves, including the week-end. The characteristics of the curves during the second week will ordinarily be much the same as those obtained during the first week, provided the plant has a stable operating schedule. It is well, however, to obtain this double set of curves and compare them. These curves, when properly analyzed, will reveal a great deal of information. From the curve drawn by the voltmeter, the maximum voltage and its time of occurrence, the minimum voltage and its time of occurrence, the voltage at the time of peak load, and the average

voltage should be determined.

The chart from the recording wattmeter discloses even more interesting and valuable information. The load during noon hours should be checked and if found to be excessive or to vary by any appreciable amount the reason for it should be established by making additional tests; the same is true of the night and week-end loads. The length of time required for the plant to reach full load after starting times and any tendency to anticipate quitting time should be ascertained. Evidence of power waste by starting motors and other equipment too far ahead of work time, or letting them run too long after work time, should be noted. The peak and maximum loads, along with the time of their occurrence, should be studied. If the daily peak loads are not the same they should be further analyzed in an effort to find out why. The maximum load as shown by the wattmeter for this period should also be compared with the power company's demand charge for the previous month. The power factor, as recorded by the recording power factor meter during the period of maximum and minimum loads, should be checked and compared with the power company's determination for billing purposes; in this way, inaccuracies will be discovered. The average ampere load recorded by the recording ammeter should be used to check the size of the main feeder; it may also be used in calculating the loss incurred in this feeder.


MOTOR N°
LOCATION

MOTOR		STARTER		DISCONNECT
MAKERS SERIAL NUMBER:		MAKERS SERIAL N°		MAKERS CAT. N°
MAKE:		MAKE:		MAKE:
HORSEPOWER:	TYPE:	TYPE:		TYPE:
SPEED:	VOLTS:	HORSEPOWER:	VOLTS:	VOLTS:
PHASE:	FREQ:	PHASE:	FREQ:	FUSED:

MOTOR DRIVES:

DATE	KILOWATTS INPUT TO MOTOR				REMARKS
	LINE SHAFT ONLY	LINE SHAFT WITH BELTS ON LOOSE PULLEY	MAXIMUM UNDER NORMAL OPERATING CONDITIONS	MINIMUM UNDER NORMAL OPERATING CONDITIONS	

This is a sample of the manila folder used for filing charts obtained by testing individual units. Similar folders, ruled to provide a place for essential data, should be made up for filing charts obtained from overall and departmental tests . . .

The period that the recording instruments are connected in the main power circuit offers an excellent opportunity to make a voltage survey on the feeders supplying the various departments with power. To make such a survey the first step is to go through the plant and take the voltage (by means of the indicating voltmeter) at as many points as desired—recording the time along with each reading. The second step is to return to the recording voltmeter and find out what the voltage of the main power circuit was at the corresponding times. The difference between the voltage of the main power circuit at any given time and the voltage at any point in the plant at the same time is the voltage drop between the two points. If the system is more than a two-wire one, the usual procedure is to assume a balanced voltage. It is best, however, to keep both voltmeters across the same two wires at all points. Any voltage drops that seem to be excessive should be followed up by other tests and the situation corrected.

Recording the Light Load

After the instruments have been removed from the power circuit, the recording voltmeter, wattmeter and ammeter should be connected so as to record the entire lighting load. Preferably, these should be left in place for a week. If a second recording voltmeter is obtainable it should be placed for 24 hours at a time so as to record the lighting voltage at various distant points. If a second recording instrument is not available the indicating voltmeter can be used on the lighting circuits in the same manner as was given for power circuits. The record from the recording wattmeter should be checked for any evidence of excessive use of power for lighting, and the maximum and minimum loads for both day and night. If the maximum lighting load and the maximum power load overlap, it may be found possible to shift them; thereby reducing the over-all maximum load. The charts from the recording voltmeters (or the chart from the recording voltmeter and the data obtained by use of the indicating voltmeter) should be carefully looked over with reference to the following: maximum and minimum voltages (those of the mains should be compared with those of the distant points); abnormal voltage drops between the main supply and any distant point (reason for it should be established by further tests); the recorded voltages and the voltage of the lamps being used. The current values obtained by use of the recording ammeter will be found useful for several things; among them, the checking of the adequacy of main feeder conductors and switches and the calculation of losses in the main lighting feeder.

Making Departmental Tests

The tests outlined will undoubtedly bring to light some very undesirable conditions, which should be localized in order that they can be eliminated. In certain cases the procedure for localizing will have to be especially planned with the condition and its characteristics in mind.

Departmental tests (that is, tests on the light and power feeders supplying each department) will generally aid materially in such work; these tests should be made and filed for future reference regardless of

NAME						
LOCATION						
TEST						
KIND OF RECORD						DATE
TEST Nº						
MOTOR DATA	MAKE		TYPE			REMARKS
	H.P.	R.P.M.	VOLTAGE	PHASE	CYCLES	
MOTOR DRIVING						
CUR. TRANS. RATIO						
VOLTAGE TRANS. RATIO						
CHART SPEED						
MULTIPLY READING BY						

Stamp used to mark charts when they are removed from instruments . . . . . .

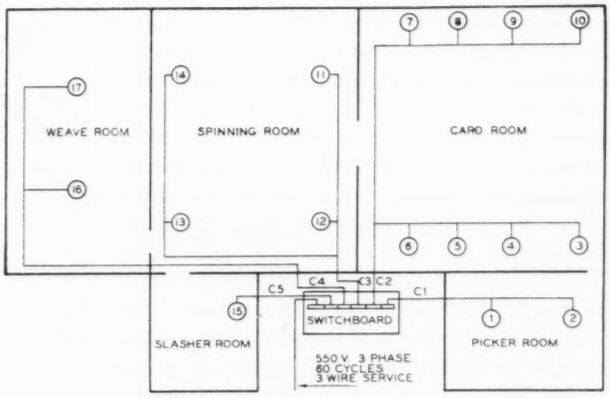
whether or not they are expected to aid in clearing up some unsatisfactory condition. In most cases a 24-hour period will be sufficient for this kind of test. Some engineers use only the recording wattmeter on departmental feeders but more information will be obtained by also using all four of the recording instruments. Tests made on each department should be analyzed in a manner similar to that previously outlined for the total load tests. It is evident that all the items listed for consideration while analyzing the total load tests will not be applicable to departmental tests, but a great many of them will apply.

The curve from the recording wattmeter should be checked for the load during noon hour, night and week-end loads, length of time required for the department to reach full load after starting times, any tendency to anticipate quitting time, power waste by operating motors outside of work hours, and the maximum and minimum loads, along with the time of their occurrence. By reference to the chart from the voltmeter, the maximum, minimum and average voltage should be obtained. The power factor of the department, as recorded by the recording power factor meter, should be compared with the previously obtained power factor of the plant so as to determine whether it is higher or lower. The values of ampere load obtained will be found useful for the same reasons as given in the paragraph on total load tests.

Tests on departmental lighting feeders are made and analyzed in very much the same manner as the tests of the total lighting load.

In addition to the departmental tests recommended, we believe in placing integrating wattmeters on the power and lighting circuits to each department. With these meters month-to-month information concerning the actual kilowatt hours consumed by each department is made available. The number of kilowatt hours consumed by any department can then be divided by the number of pounds of cotton processed by that department to give a figure—kilowatt hours per pound processed. A record kept of such data would quickly show any tendency of a department to become inefficient in its use of power. Such a condition, when indicated by the integrating wattmeters, would of course have to be investigated by means of the portable recording meters.

Tests of the various departments should be followed up by tests of the individual units in the plant; for, any undesirable condition shown by the previously described tests can be traced to its origin only by this method. Such tests, just as was stated



Sample drawing illustrating manner of numbering motors and circuits . . . . . .

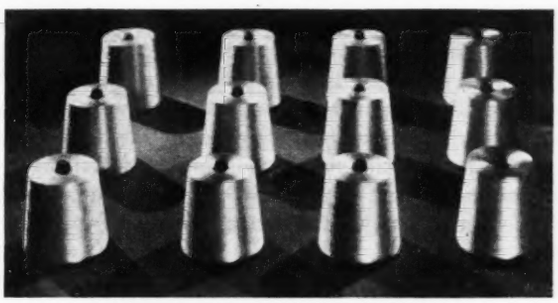
for the over-all tests, will be found useful for future reference and they should be made in all cases.

Unless some specific condition, requiring the use of other instruments, is being investigated, the graphic wattmeter and voltmeter will be found satisfactory for the testing of individual units. No fixed length of time can be given for leaving the instruments in the circuit of an individual machine. The length of time required and the chart speed to be used are two things which must be determined by the purpose of the test and the characteristics of the load in mind. However, it will only rarely be found necessary to run such a test more than 24 hours. While making tests of this type, the tester should be certain that conditions are normal and he should keep his eyes open for anything that might affect production, the cost, or the quality, of the finished product. This certainly includes a check on the condition of the equipment. When a motor is driving a group of machinery by means of line shafts and belts, the friction load, with all machine belts on the loose pulleys, should be measured.

From the chart taken from the recording wattmeter, the maximum, minimum and average loads during normal operation should be calculated and compared with the name plate rating of the motor. If the motor is either too large or too small for the job it should be replaced. The friction load (that is, when the machine is running idle or, as described, with belts on loose pulleys) should also be calculated and considered with reference to its percentage of the total load. The possibility of operating the motor on a different schedule so as to reduce the maximum demand charge should be investigated. The chart should be examined for indications of unnecessary lost time. Curves from graphic meters, when properly analyzed, will often reveal surprising things; the best way to discover these is to make an attempt to understand the cause of every irregularity of the curves.

Information obtained by testing, as somewhat sketchily outlined in this article, is important to many departments and should, in our opinion, be made available to them. Facts concerning engineering, maintenance, cost of power, plant condition, and production, are to some extent often present in the results. Results of well-made tests, properly followed up, are frequently almost unbelievable.

A Review of Modern Practices IN RAYON WEAVING PLANTS



By H. W. ROSE
The Viscose Company

METHODS of preparing and weaving rayon have become clearly defined and well established. Refinements are constantly being made in details of machinery and procedure, however, and no progressive weaving unit is willing to resort to rule-of-thumb routine and go free wheeling. In fact, perhaps the most clearly established trend in weaving rayon is the one of concentration. By this is meant the segregation in the mill of rayon manipulation and weaving separate from other fibers and the regimentation of it in efficient, balanced processes. The profitable units are the ones whole-heartedly in the weaving of rayon. Those have been found less profitable which fill in with rayon to run idle looms here and there in a cotton or a silk weave room and which prepare the yarn with makeshift machinery in odd corners of the mill elsewhere.

Specialization or Segregation Important

Segregation of rayon has the primary advantage of accurate costs, a point which is of importance in a market that certainly is not growing less competitive. It has the additional advantage, not always so apparent, of improved quality. Consider, for instance, the question of humidity. Filling quills of yarn can go soft from two causes. They can absorb additional moisture and loosen up, or they can dry out so that the contraction of yarn causes the turns to slip. Both lead to shelling off in weaving and to loose picks. The atmosphere of a weave room which is not fairly near that of the preparation rooms in relative humidity may cause weaving trouble in accentuated starting marks and shiners in filling. If the weave room is devoted to rayon, the atmosphere can be controlled accordingly, but with cotton weaving in the same room it is not practical.

Humidity in Rayon Weaving

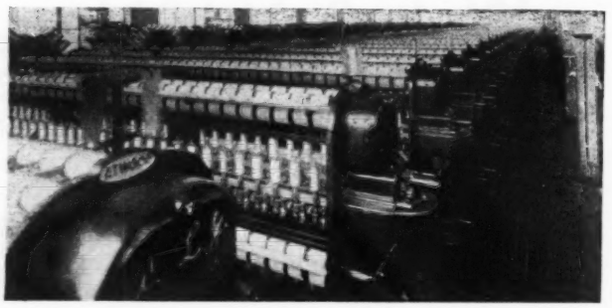
The question of humidity receives much attention, but it is not universally realized that some moisture is necessary in rayon. In the early years when shiners were a mysterious problem, humidity was avoided as much as possible. With the rapid improvement of yarn strengths and the introduction of the pigment type of dull yarns a certain amount of moisture became necessary. Winding rooms will frequently drop to 30 or even 20 per cent of relative humidity. Under such conditions the yarn is dry and less flexible and any broken filaments in the yarn have a tendency to stand out and catch or break off to become troublesome slubs or fly. The exact degree of humidity is not so important as it is to have the humidity in all rooms approximately the same and not over 65 nor under 50 per cent.

Speaking of shiners, it might be mentioned here that while the periodic type of moisture shiner, that is, the short type that makes a pattern, has been controlled to considerable extent, the shiny pick type caused by knots has continued to some extent. A revival of this complaint started with the use of cones for filling winding as well as warp creels. It is general practice in cone winding to place all knots on top of the cone. In fact, a mill finding knots buried in a cone traverse will register a kick with the yarn producer, and rightly so, for they can cause shiners or even broken ends, and only by reporting them can the cone winding operator be checked. However, the same mill winding filling from cones will most likely bury all knots in the quill traverse, and under some conditions this may cause shiny picks. The remedy in such a case is to clip all knots on the cone. The filling operator then either winds knotless quills, changing to a new quill as an end comes down, or re-ties the clipped knots, and in so doing places them outside the wind on the quill. Clipping of knots adds to the cost and is only justified where repaid in quality.

Mr. Rose

Winding filling from cones has brought about improvements introduced by the machinery manufacturers. The first device to place tension on the yarn when winding from cone to quill, where it could not be applied to the package as in winding from a spool, was of the washboard type. Tensions of this type

are still widely used, but the trend is away from them. The washboards have a tendency to wear in grooves, particularly under constant use by the pigment type yarns, which are more abrasive than the others. On the other hand, a tension device is not ideal, if the yarn is wound around and saws on itself. The idea is simple and is used extensively, but it is fairly obvious that broken filaments or knots in the yarn are aggravated by such a device, and the trend is away from it through improvements offered by machinery manufacturers. One type, for instance,



Courtesy, Atwood Machine Co.
A southern installation of rayon twisting

carries the yarn around a curve on which are mounted pins carrying tension discs and thence down over a wheel. The tension is in the slight drag going past the pins on the curve and has proved quite adequate and safe.

Making Rayon Crepe Yarn

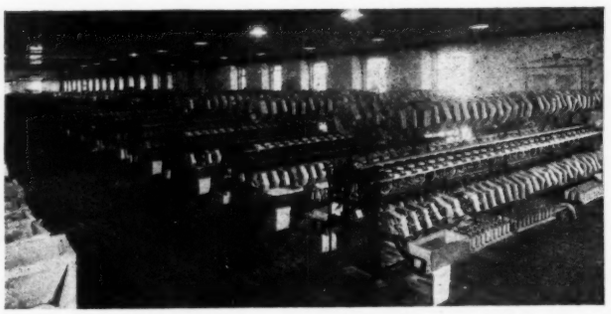
The making of rayon crepe yarns has become a science in itself. The revelation of the creping qualities of viscose yarn led to the development of a variety of fabric effects possible with no other fiber. This variety is determined partly by the weave, but for any given construction the depths of pebble and crepe effect can be controlled to a considerable extent in the preparation and throwing operations. On this account certain throwsters maintain reputations on thrown yarns for certain purposes, and among weaving mills that do their own throwing some will hold an advantage over others. There are not many fundamental secrets in the industry these days, but in the matter of preparing crepe yarn the methods are sometimes carefully guarded. Throwing yarns are offered by some rayon manufacturers treated and ready for throwing, but these are mostly suitable for production runs on staple crepes. For quality, novelty, variety, and individuality, the weaver prefers to specify the creping.

Treating the Yarn

Selection of the type of solution for treating the yarn is important. A variety of materials are available, and a variety of results in pebble can be obtained on the same yarn. When a choice of material has been made for a particular type of yarn and crepe, the aim is for uniformity in everything, in application, in condition, in tensions. It is no longer considered good practice to apply the tinted size solution by immersing bundles of yarn in a tub. Air bubbles inevitably cause uneven application, and the unevenness is quite apparent from the streaky tint in the yarn. Obviously where there was no tint there was no size, and one would hardly expect uniformly creped yarn under such conditions. Usual practice now is to treat the yarn in a regular dyeing operation on machines of the revolving arm type designed for the purpose and in which distribution of material and even application are readily controlled. Care must be taken, however, that the solution does not gradually become dilute or exhausted. Some of the gelatine solutions if used repeatedly will become exhausted without appearing to do so, and disaster will descend on the fabric in the form of uneven crepe.

Importance of Temperature Control

Temperature control during application is important, as fluctuations in temperature cause uneven application. The higher the temperature the less the size. The time of application should also be uniform. If uniformity is stressed throughout, the effort is repaid in uniformity of crepe in the finished fabric. The point cannot be overemphasized, for there is such a time spread between the throwing of the yarn and the final finishing of the cloth, possibly in an-



Courtesy, Atwood Machine Co.
Rayon winders in a southern mill

other part of the country, and after ownership of the goods has changed once or twice, that the connection between cause and result easily can be lost. By the time complaints on finished goods come back to the mill the style is frequently complete and the looms are starting on other styles. This condition is rapid changes, particularly on novelty goods, together with the delay in finishing goods by the converter, has emphasized the importance of making the cloth right in the first instance. Since crepe effect cannot be judged in grey goods, it is usual practice to have some pieces finished, as a check for the mill, before any great quantity is made up.

After size solution is applied to yarns to be thrown, with all due care to uniformity, the excess size is then extracted. The treated, tinted yarn is wrapped in cloths, and, again with the idea of uniformity, only one cylindrical layer of bundles is placed in the extractor. Extracted liquor is not returned to the bath. Whizzing is stopped automatically at a point where the damp yarn weighs twice the natural yarn.

Early methods of drying and conditioning yarns for creping in some mills were makeshift. Today the

procedure is to use dryers or rooms scientifically designed for the purpose. To insure uniformity the air is circulated in the dryer and excess moisture carried off. The yarn must not be dead dried, however, as it will give a different resulting effect, even though it is subsequently brought back to normal moisture content. Good results are obtained in a dryer with a temperature not over 176 degrees F., wet bulb 126 degrees, relative humidity 30 per cent, under which condition the yarn contains 5 per cent moisture and will not be damaged. It is considered good practice and safer to use even lower temperatures and more drying time. Some dryers have a humidity chamber at the end which controls the humidity at a certain point.

Drying and Conditioning

After drying, the yarn should be conditioned to the winding room atmosphere. The winding room is carefully regulated to 65 per cent relative humidity and the yarn is exposed in that atmosphere for several hours before it is wound. When one realizes how difficult it is to dry a skein to the same degree in all parts, next to the rods, under the lacings, as well as in the more open parts, it is readily seen what would happen if the skein were hurried at once into the winding operation without allowing it to reach moisture equilibrium with the atmosphere of the room.

Throwing rayon has become established on two systems. On the cotton system the yarn is twisted onto the spindle, while on the silk frames it is twisted off the spindle onto a spool. The former is used mostly for staple crepes and is the only one on which coned yarn can be used direct. Because of the saving in winding cost it is more economical. When it is desirable to control the preparation of the yarn as well as the twist, however, the silk system must be used. The majority of novelty and fine crepes are thrown on the silk system.

In throwing by either system uniformity is controlled at every possible point. Spindle speeds should be checked twice a day by stroboscope and any chattering or slippage eliminated. Barre filling is affected by variations or a combination of them through any or all processes, but, of course, regular and even throwing is necessary if that trouble is to be avoided. Humidity in the throwing room is as important as elsewhere, and it should be carefully regulated at 65 per cent and distributed evenly throughout the room by carriers or fans.

Steaming to Set the Twist

Steaming for setting twist is usually done with the yarn on metal bobbins designed for the purpose. In a commercial steamer, such as a Mertz, Lydon, etc., steaming requires 30 minutes to two hours. Elevated temperatures hasten penetration, but it must be remembered that it is moisture which sets the twist. When a standard is adopted it should be closely adhered to for each successive batch in the same lot to insure uniformity. The steamer should be kept clean and care taken that precipitation does not drip on the yarn to cause spots or stains; a properly designed steamer should prevent trouble from this source.

After the twist is set it is again necessary to condition the yarn thoroughly before the next winding process. The conditioning should not be rushed; overnight is preferable, but at least several hours should be allowed with the yarn in an atmosphere of not over 120 degrees F. dry bulb, and then conditioning should be allowed in the atmosphere of the winding room. The relative humidity of that room will be about 60 per cent and slightly less than in the weave room.

Cone Creels for Rayon Warping

Development of the cone creel has continued steadily since its first introduction for rayon. There are several types now used, and in their present state of perfection the choice is between various adapta-

Courtesy, Cocker Machine & Foundry Co.

Warping rayon at high speed

tions of the same principles. The trend is toward heavier cones, that is, more yarn on the same center. Older creels were designed for a six-inch, three-degree thirty-minute cone, that is, having the sides three degrees thirty minutes off parallel, wound with two pounds of yarn. A 6¾-inch cone holding three pounds of yarn is now being used extensively, with the attendant savings in handling and creeling in. Recent creels are designed with a wider cone holder bracket or with such other modifications as may prevent the larger cones from touching and thus permit proper ballooning. The older creels can be used, even though two full three-pound cones touch, by allowing a fresh cone to run half out before creeling in the second.

Three-Pound Cone Most Prevalent

The newest creels are designed to take three-pound cones. Some four-pound cones are being tried, but it remains to be seen whether that size is beyond the limit for safety in shipping and for quality in warping. It is conceivable that when the limit on such a package is exceeded the weight of yarn will cause it to slip on the cone if the case is handled at all roughly, and if it is subjected to excessively damp or dry atmosphere. A soft cone of four pounds would naturally cause more waste than one of less weight. The three-pound cone is at present well proved, and it only remains for the older creels to be

replaced to allow maximum benefit from the use of that size.

Mills running staples in many cases wind filling from the same cones as warp. In such cases the quilling machines should be adapted to take the larger cone so that a uniform package can be used for both processes. The only difficulty with some filling winders is the lack of room for the larger cones. Cone holder plates of a size to accommodate the larger cones should be staggered instead of being lined in a row, or by some other such arrangement given room.

Tensions on cone creels have been the subject of much improvement. Faulty tensions are a primary source of strained warp ends. The devices are various, but here, as in quilling, the sawing of rayon yarn on itself should be avoided as much as possible. All cone creel tension devices should be in careful adjustment and all ends under as nearly the same tension as possible. Cleanliness is essential. Accumulations of fly or lint or broken filaments tend to increase tensions, and frequent cleaning of the entire creel is good economy.

Sizing the Rayon Warp

In warp sizing, an important hot air machine has been given some attention. The advantage that hot air has over a hot cylinder is the avoidance of baking the size into the yarn by too sudden a drying action. Rayon swells when wet and is receptive to the size. In drying, the yarn contracts. It seems reasonable to believe that a yarn which dries and contracts slowly can be more readily de-sized than one which has had the size sealed into it by a sudden searing action.

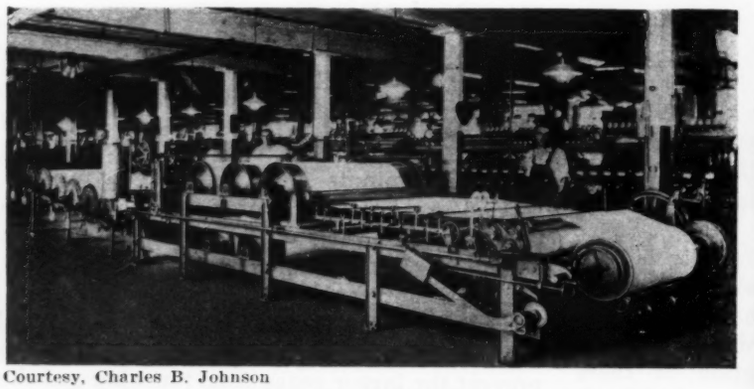
The warm cylinder sizing machine is most widely used. It is available, however, with the hot air principle incorporated. A hot air box surrounds the warp from the point where it leaves the size box to where it comes in contact with the first cylinder. The size is thus beginning to dry and congeal before the hot cylinder is reached, and the sudden shock and baking effect is minimized.

Gelatine or glue sizes are quite general with rayon now. The early starch sizes, carried over from cotton practice, have been abandoned to a great extent. It has been demonstrated that for rayon a gelatine size is more readily removed than starch, and complete removal is essential to level dyeing; less size can be used for the same degree of adhesiveness, and a softer, more pliable warp results. Gelatine size is frequently mixed, congealed, and cut into cakes of about two pounds. A batch can then readily be prepared without careful weighing or measuring, by dissolving the cakes in so much water.

In using gelatine sizes it is found to be false economy to prepare too much in one mix. Gelatine itself can break down in too violent a mixing. It can go bad over a period of time and lose its plastic quality. A fresh solution is preferable, made from the raw material or from the cake.

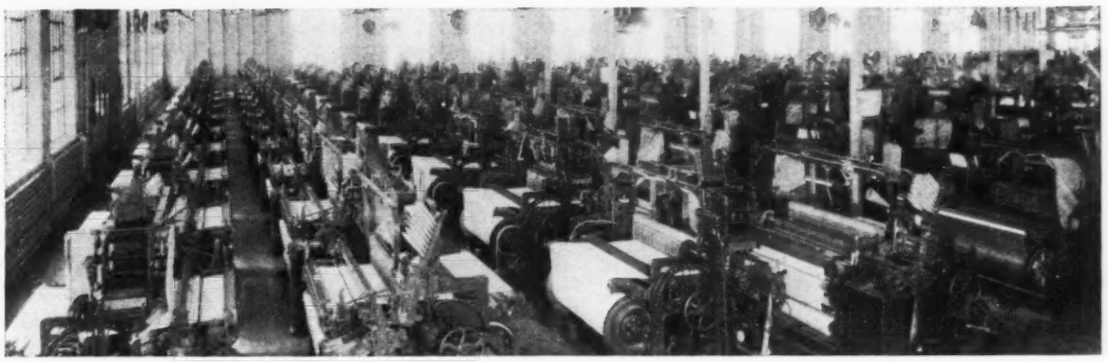
Much has been said and written on the subject of the cotton versus the silk system in warping rayon. Since the comparison began, so many millions of yards of high count satins and fine crepes of rayon have been prepared satisfactorily on the cotton system that it seems to be fully justified as to quality of product. The economy in that system is so outstanding an advantage, with labor 50 per cent less, that the comparison narrows down to a few points. The silk system has had the advantage of a facility in leasing the warp. A corresponding disadvantage in the cotton system has been overcome by the adoption of the hook reed. This simple device has a hook pointing down on the side of each dent; a set of ends can be allowed to pass to the top of the reed by pressing the free side of the dents against the yarn, or the set can be hooked down by pressing the hook side of the dents against the yarn.

A frequent difficulty experienced in lining twills and taffetas is a reedy appearance in the grey cloth which does not come out in finishing. Such goods will seem to have warp streaks but on holding them up against the light it is readily seen that the warp ends are close together in some places and are spaced apart in others. The design of the cloth has something to do with it, as the effect is not so noticeable in high sley constructions. In the more open constructions the effect can be minimized by care and adjustment of reeds, by adjustment of size consistency, and by maintenance of size rolls. A size which is too stiff will tend to run up in peaks on groups of



Courtesy, Charles B. Johnson

Above, a rayon warp sizing machine; right, a new warp conditioning unit applicable to these slashers



A view in one of the weave rooms of Burlington Mills, the largest producer of woven rayon fabrics in the country . . . . . .

ends out of the size box, and they will actually have more material on them than other ends. Ridges and dents on the size rolls or rings and accumulations of deposits on the rolls will contribute to this uneven dispersion of the solution across a warp. Rolls should be kept smooth and clean. In the finished goods it is surprising to find that the ends which appear to be massed together may be the ones which are properly desized; ends which still hold some size will not have opened out properly, will not cover so well, and may appear to be actually finer yarn than the others. In twills and some taffetas this type of warp streak is more prevalent than dye streaks.

Modern Equipment is an Essential in Weaving the Rayon Fabric

At no point is up-to-date and well maintained machinery more important than in weaving. Given the same construction, the same class of weaver, and with all other general conditions the same, a staple fabric such as a twill will cost from one to two cents a yard more on old looms than on new and well conditioned looms. Nor does it necessarily take a generation of service to make a loom old in these days of novelty weaves and rapid changes of construction. Looms two years old are sometimes replaced profitably when the newer ones do better the job at hand. Looms obsolete for the work given them can dig a mill in deeper every year, and if there is to be a loss in replacing them the stock market proverb holds true that the sooner it is taken the less it will be. Today there are mills weaving with eight old looms to the weaver and selling in competition with the same fabric woven twenty-four new looms to the weaver. It is fairly obvious that the new looms will pay for themselves.

The automatic let-off is a recent adaptation which improves rayon weaving. Filling bars are frequently caused by a jumpy effect with the ordinary friction let-off that is not properly maintained. Such bars sometimes appear to be uneven denier in the filling yarn, but a pick count will readily establish the distinction. Smooth let-off and take up are essential to level filling.

Two types of automatic looms are being used for weaving rayon, the bobbin-changing and the shuttle-changing types. The main difference between the two is that in the latter the type of yarn tension in the shuttle can be chosen in accordance with the yarn size, loom width, and such factors that may affect even tension of picks. On the bobbin-changing type there is no choice and at times the first pick, because the yarn is threading into the shuttle eye, is either tighter or looser than the rest and a mark is apparent in the cloth.

This list of random notes can be extended indefinitely, and each mill man will have various improvements of his own that could well be added if we knew of them. These points are offered, however, with the thought in mind that all processes are aimed toward a finished fabric, and, in solving a technical problem, it is hoped to avoid the case where the operation was a success but the patient died.

Ice Bag Best Seller

The cocktail consumer as well as the housewife assisted in the new ice bag becoming the best seller of last year. This bag, about six by nine inches, was made of 12-ounce army duck. Although the Cotton-Textile Institute ruefully admits that while the wear and tear on kitchen towels (formerly used for crushing ice) will be greatly reduced by the new device, further markets are open to the heavy goods manufacturer. The Institute has yet to find a substitute for the chrome-steel mallet head that goes with the ice bag but as soon as it succeeds, the sales on cotton mallets should offset the loss by kitchen towels' increased life.

Cotton Runways for Airports

According to the Cotton-Textile Institute, specifications for construction and improvement of the Port Newark, N. J., airport include provision for installation of the world's first "cotton runway". Engineers have now generally recognized that cotton is well adapted to the construction of highways and the use as a runway is only a step further in the development of modern transportation means. Cotton runways will also be installed by the U. S. army engineers at Fort McClellan, Alabama.

May Open Central Laboratory

Dr. Irving J. Saxl, who recently resigned as director of research and development of the Waypoyset Manufacturing Company, is considering establishing a textile testing laboratory for yarns, sizes, and oils that will serve non-competing mills and raw material producers on a consulting basis. Dr. Saxl is a member of the warp sizing advisory committee of the U. S. Institute for Textile Research.

Cutting Clothroom Costs!

By GEORGE H. MASON
President Hermas Machine Co.

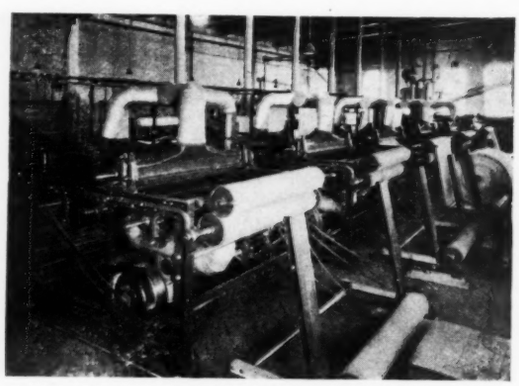
HERE is a briefly-spoken and emphatic piece for the oft-neglected cloth room. By the time your cloth gets to this department, it represents a real investment which can be adversely affected by improper treatment. This article draws some strong comparisons between antiquated and modern practices. How do you line up? . . .

IN THEIR SEARCH for ways to meet competition, many mills forget that cleaning and handling the finished cloth can be made to share in bringing costs into line. High speed warpers, automatic looms and improved equipment of many other types, have materially altered textile manufacturing technique and have lowered operating costs.

Only one department is still old-fashioned—the cloth room. There is a wider diversity of operation in this department than in any other place in the mill.

True, in some plants, the cloth room is modernly equipped, comparing favorably with the finest weave sheds, spinning, warping, and sizing departments.

An Old-Fashioned Clothroom
"An old-fashioned clothroom, all work done by hand . . . slowly and expensively, with variation in output of different workers . . ."



A Modern Clothroom
"All hanging threads on selvages and faces of fabric removed automatically, quickly, uniformly, and at minimum cost . . ."

Every operation is standardized and mechanized. But in others (and these are in the majority) it is an "orphan". The methods employed date back to before the war—the Spanish-American War. This group by no means is restricted to small, old-fashioned plants.

Goods are dumped into the room, laid out on long tables and slowly and *expensively* cleaned by hand, inch by inch. Selvage threads are burned off, with a blow torch. That this picture is no exaggeration will readily be appreciated when we recount the things we have seen in some of America's leading plants.

For example, there is the X Manufacturing Company—in other respects a most modernly equipped plant. In this mill the goods are first brought into the department in rolls and run over a perch. The operator pulls the goods down onto the floor while examining them for imperfections. This is the first operation. Next the goods are gathered up and put on a rolling machine, measured, and made up into rolls. The third step is to split these pieces into 60-yard lengths and put them onto tubes.

Here is one of America's greatest manufacturers handling goods almost primitively, employing three operations, with waste of time and money, when with modern clothroom machinery all three operations cocld be performed at one time. Through the use of modern measuring and rolling machines these goods could be examined, measured, rolled and cut *in one operation* with substantial savings of time and money.

Similar savings and improvements in quality are effected in picking and trimming operations through the use of an automatic shear. For example, removing selvage threads by hand-singeing frequently not only scorches the selvages but also misses many ends which are rolled into the pieces. These ends cause a "snap" when the finisher or printer processes the goods. A snap, of course, is a streak of concentrated color extending from selvage to selvage of the goods. The unremoved, folded-in end trips the "doctor blade" and raises it above the surface of the roll and so prevents it from wiping off the surplus color. This leaves a streak.

Another advantage of automatic shearing, from the standpoint of the textile dyer and printer, is that the strong suction used to draw all surface and selvage threads up into the blades for shearing also removes all dust, dirt, and lint, leaving the goods clean. Consequently the dye liquor does not become dirty, and a good clean dye is insured for processing.

With some constructions, due to various conditions, considerable difficulty is experienced because of kinky

filling. It is too expensive to clean some such goods by hand and they are thus discarded as "seconds". When a shear is employed frequently as much as 80 per cent of these "seconds" are reclaimed as firsts.

Another interesting example of the average mill's attitude toward the clothroom, is the case of a large southern cotton mill, who require four shears, purchasing only one shear merely so they can advertise they are shearing their goods, ignoring the savings they could make by completing the installation.

Indeed, New York commission houses are more alert to the need of modern cloth room equipment than are most mills. Many of these firms have incorporated a clause in their contracts stipulating "Goods furnished on this order must be sheared", because of the better appearing and more salable quality of the goods prepared in this way.

There is an instance of a large mill which was offered an order that would have kept 700 looms operating on broadcloth but because of the expensive hand trimming and cleaning necessary on this type of fabric they turned the order down, not having a shear.

Again, consider the performance of an old, non-automatic two-knife shear as compared with a modern four-blade fully automatic machine. The old non-automatic shear runs at only 25 yards a minute as against 70 to 100 yards a minute for the automatic. Two operators instead of one must be employed. The goods must be run through twice—once for each side. In short, the old machine has a production of only 12 per cent to 20 per cent of that of the modern machine, with twice the labor cost.

If a battery of automatics (which requires only one operator) is considered, the saving is still greater. And if a comparison is made with hand operations (workers will clean only about 6 to 10 yards a minute) the disparity is even more impressive.

Machines eliminate the human element, and make for uniform production, independent of the whims or the varying ability of hand operators. When old hand methods are employed mills frequently require several days to route the goods through the cloth room. In certain constructions and in some mills only one piece is cleaned a day by hand operators. With modern machinery the goods can be cleaned, measured, inspected, graded and shipped the same day they arrive in the cloth room. There are also considerable savings of interest, inventory, and insurance through the use of modern equipment.

Of course we appreciate that the problems of many mills differ. Variations in construction of the goods and in market requirements all affect cloth room methods. But many mills of this country could easily save thousands of dollars a year if they brought up the efficiency of their cloth room departments to equal that of other departments of their organizations.

Processing Tax Situation Still Confused

January 29, 1936

UNDER the adverse ruling of the Supreme Court of the United States on the AAA, brought finally to a climax by the Hoosac Mills' case, and as directed by the Court, the textile mills of the country are in the course of receiving funds paid as processing taxes and held in escrow by the Federal District Courts.

However, the mills are considered to be treading on unsound soil when it comes to distributing these monies to their various customers because of the effect of Congress to levy an excise tax retroactive to August 1, 1933, when the ruling of the AAA was inflicted on the textile industry.

If this measure becomes a law, and with Congress' disdain for the constitutionality of bills passed making it entirely possible, the mills will err by passing the funds on to their respective customers. The textile executives wish to clear the matter of refunds to their buyers up because of the ninety and one hundred and twenty day clause agreements with them, but until a definite stand has been taken by Washington, the mills are assuming a risk and an expense of distributing the funds and then re-collecting them to pass them back to the government.

Operating on a close manufacturing profit as the textile plants have done in the last few years, the burden of additional legal expense and accounting procedure involved in the return of the taxes from the government and the distribution of the taxes to the mill's customers is proving a financial discouragement to textile interests.

At the time of ruling the AAA as unconstitutional, the clouds over the textile industry had begun to clear but three weeks later, at the writing of this, utter chaos reigns in the field.

Only a definite action on the part of Washington and a policy of *laissez faire* by Washington toward the cotton manufacturers can be interpreted to cause a revival of trade in their business.

At this time, neither available time nor space permits a detailed discussion of the individual problems arising under the ruling of the Supreme Court nor the direct results of this ruling. The decision has brought many theorems to light that yet have to be cleared.

January 30, 1936

In an effort to aid in clarifying the situation somewhat, some recommendations have been announced following a meeting on yesterday in Washington of the board of directors of the Cotton-Textile Institute, the board of governors of the American Cotton Manufacturers Association, and the board of directors of the National Association of Cotton Manufacturers. Press reports quoted Dr. C. T. Murchison, president of the Institute, as stating, following the meeting, that the industry leaders urgently suggest to all mills return of tax money, when called for in contracts as the monies in escrow are refunded to the mills. This suggestion is made in the face of threatened excise levies, since, it was explained, the contracts for the goods sold call for the refund to the mills' customers. The meeting issued a warning that retroactive taxes would ruin many mills; suggested as a counter-proposal a farm program financed by a general sales levy.

Recent Trends in Air Conditioning for TEXTILE PLANTS

By J. C. HIPP
Engineer, Lockwood Greene Engineers, Inc.

AIR CONDITIONING in textile mills, one of the pioneer applications which pre-dated the more general adoption of this advanced practice throughout industry and commerce, has witnessed in recent years certain fundamental trends and tendencies. An engineer discusses these developments and describes briefly the principles of some of the newer equipment . . . . .

CONDITIONING the atmosphere in textile plants as practiced today consists of providing heating, humidifying and evaporative cooling, ventilation and air cleansing. All of these things may be accomplished with one equipment (or machine) as typified in the central station system, or may be done with a combination of several separate equipments, each doing its own work and being co-ordinated with the others to a greater or less extent. Automatic control is essential for satisfactory results.

Air Conditioning in Textiles

The aim of air conditioning in textiles is (1) to get better running work, proper regain of moisture and more efficient production, and (2) to provide "commercial" comfort for employees, as distinguished from comfort conditions required for theaters, office buildings and such. Uniform temperature and both uniform and constant relative humidity are the first requirements, but these must be had at reasonable cost. That is why refrigeration is not yet used except in a limited way in laboratories and silk mills. So that we have to depend upon cooling by evaporation of water, and this is limited because the dry-bulb temperature can be lowered only to the wet-bulb temperature—which is normally a range of 5 to 15 degrees. Evaporative cooling, however, will give an "effective" temperature that is generally satisfactory for commercial comfort. By "effective" temperature is meant the temperature that one "feels the air to be" and not what it actually is. Effective temperature may also be defined as the approximate average of the dry-bulb and the wet-bulb temperatures—and this, for comfort, should not exceed 82 degrees. To illustrate: 55 per cent relative humidity and 90 degrees temperature in the card room will "feel" the same as 85 per cent relative humidity and 84 degrees temperature in the weave room, although the actual temperature in weave room is 6 degrees lower than in card room.

Mr. Hipp

Ample humidifying capacity must be installed to allow maintaining a low enough effective temperature in the mill for the comfort of the employees if the employer expects to get the maximum efficiency from his help. If the proper capacity is not installed to maintain comfortable conditions the help will open windows in an effort to lower the temperature—and this oftentimes not only lowers the humidity considerably below that desired, but causes the temperature to rise. Many an old plant will bear checking up on this point—the reason they are so often found to be under-equipped is because of the way the job was figured.

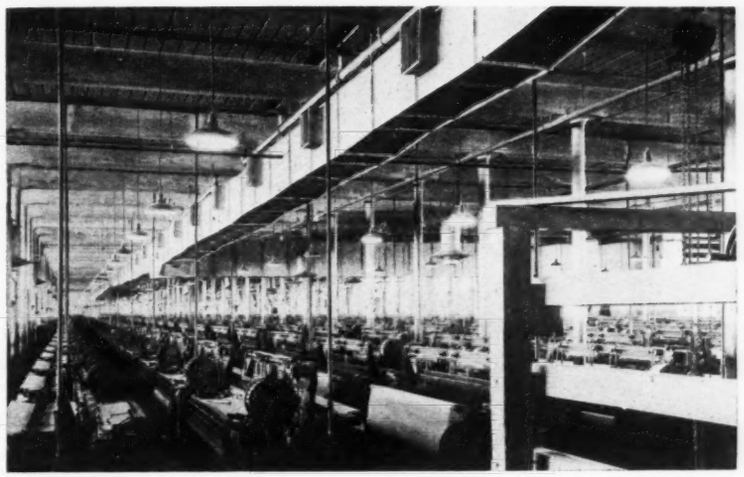
Old Method of Figuring Humidity

Not so many years ago there was a sort of rule-of-thumb method of calculating the capacities of humidity equipment required which allowed so many grains of water to be evaporated per cubic foot of volume of room for each particular process of manufacture. For instance: If it were a weave room—38 grains, say, would be used, or a card room, 20 grains. And then for the crowning misconception, the manufacturers of humidifiers would guarantee a job only on the condition that all windows and doors be kept shut.

"Heat In-put" Basis for Humidity

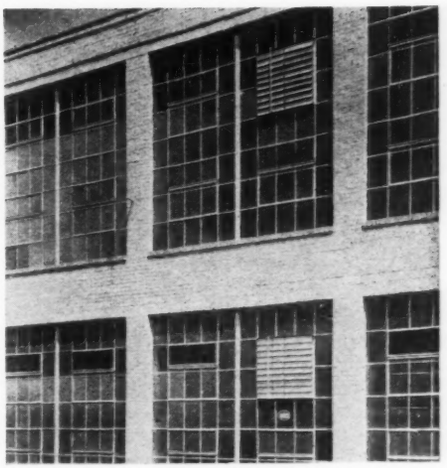
Now it is kown that there are other and more important factors than the room volume to be considered. Chief of these factors is the heat that is produced inside or introduced into the mill. Electrical energy used to turn the wheels of machinery and to light the building is transformed into heat in doing its work, the human body throws off heat, and the exposed surfaces of mill walls and windows permit the sun's rays to bring in heat. This heat must be absorbed by evaporating water or be removed by changing the air. The proper combination of the two —evaporation and air change—is the answer.

The actual horsepower input to the various machines is of the greatest importance in determining air conditioning equipment, and now since long draft, large package spinning is being so universally used—and the power consumed by these machines is greater than on the older model spinning frames—almost every mill that has made the installation recently is under-humidified. This statement may be surprising at first, since with long draft spinning the actual humidity required is often less than for short draft; but



Courtesy, Parks-Cramer Company

Fig. 1. Air changer equipment in weave room, used with existing free moisture type of humidifiers (high duty heads) . .



Courtesy, Parks-Cramer Company

Fig. 2. Automatic exhaust air shutters, used for central station equipment and air changer equipment. These shutters automatically open when the air conditioning equipment is introducing fresh air into the mill, and automatically close when it is re-circulating the room air.

with the increased horsepower input more heat units are being generated, and hence more gallons of evaporation are needed.

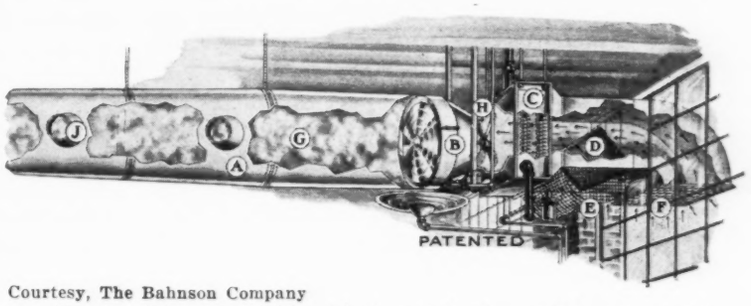
Recent improvements in air conditioning equipment have been along the lines of more complete heat absorption by evaporation—adding more moisture and taking in more fresh air to absorb it. It was simple enough to add more humidifiers but it was difficult to outguess the changes in wind direction and weather. Proper air changes could not be obtained by haphazard opening of windows, so the next logical step has been to provide a positive means for introducing fresh air —the amount of which could be varied in accordance with the conditions in the room—and to distribute this air throughout the room so as to give a uniform condition.

New Types of Apparatus Available

Air Changer: The air changer is a system of distributing ducts and fan for introducing fresh air or re-circulating room air uniformly throughout the room. It is to be used in combination with the free moisture type of humidifiers (atomizer or high duty). This is illustrated by Fig. 1. It is claimed for this system that it automatically introduces into the mill the exact number of air changes per hour to produce and maintain the maximum cooling effect and desired relative humidity. The room temperature is controlled by the humidity side of the controlling device instead of through a thermostat. By this means it is necessary for the room to reach the proper humidity before any air is taken in from outdoors, and as long as the humidity remains at the desired point, fresh air will be introduced and thereby the maximum cooling effect will be obtained. It is also claimed that the air changer will produce the same results as a central station equipment and at much less cost. Both types have controlled ventilation, but with the central station the humidifying is done in the air washer, whereas with the air changer it is done with direct humidifiers after the air is discharged in the manufacturing department.

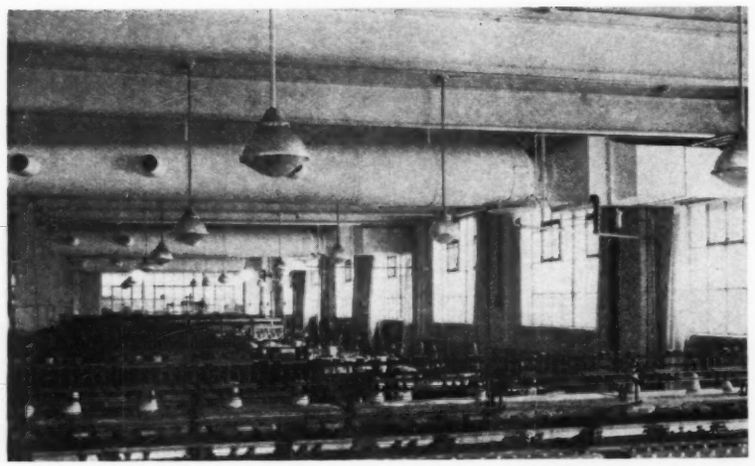
Automatic Exhaust Air Shutters: These are automatic ventilators of the shutter type which are designed to open automatically when the air conditioning equipment is introducing fresh air into the mill, and automatically close when it is recirculating the room air. They are placed at suitable intervals in the exterior walls. Fig. 2 illustrates the method of installation. The shutters are operated by the slight air pressure built up when fresh air is introduced in the room.

Humiduct: The Humiduct is a unit air conditioner, designed to draw fresh air from outdoors and humidify it before discharging it into the room, or to recirculate the room air in whole or part as desired. It may contain a heating element or may be operated in conjunction with an independent heating system. Air filters may also be included when desired. Fig. 3 is a cut illustrating the inner workings and Fig. 4 shows a number of units installed as a system in a hosiery mill. The ventilating equipment is controlled by temperature regulators so that as soon as the temperature exceeds a pre-determined amount, fresh air is introduced which tends to lower the temperature. In some cases where low relative humidities are desired and where little heat is generated it is often desirable to



Courtesy, The Bahnson Company

Fig. 3. Diagram of Humiduct, a unit air conditioner, combining heating, humidifying and ventilating in one unit . . .



Left, Fig. 4. Humiducts in a hosiery mill.
Courtesy, The Bahnson Company

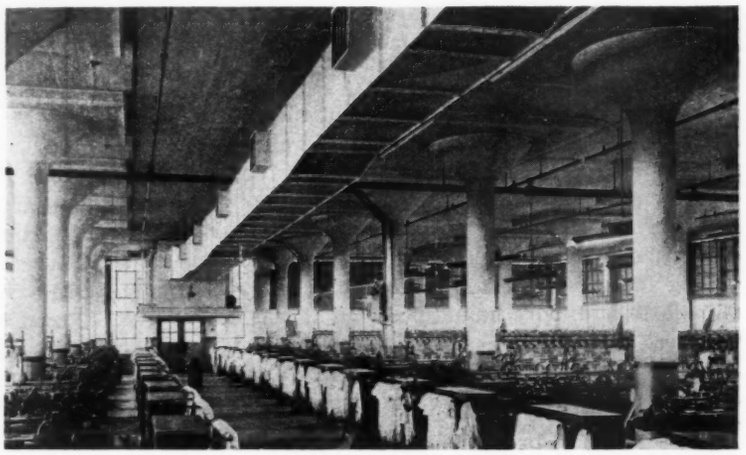


Fig. 5. Complete central station equipment mounted on a platform in the work room of a hosiery mill, with the duct work extending down through the mill. The unit on the platform is complete with fan, pump, motors, sprays and dampers. Note automatic humidity and temperature control on third column from right end of the picture . . . . . .
Courtesy, Parks-Cramer Company

control the ventilating equipment with respect to relative humidity as well as temperature.

Central Station System: Central station air conditioning is not new, but its adaptation to smaller and more flexible units is an advance over the early installations. Fig. 5 is a typical illustration. The complete unit is mounted on a platform in the work room. In this way one or more units can be used for each room or department and the controls set for the exact relative humidity and ventilation required for the manufacturing process carried on there.

Clean air is necessary for quality product in hosiery mills and sometimes in certain departments of cotton mills, such as cloth rooms. It also is desirable for the health and comfort of employees. Fine particles of dust, dirt, soot and pollen carried by outdoor air can be removed by either air-filters or air-washers. For best results both air filtering and air washing are used. If the air is filtered before washing, the water used in air washer is kept cleaner.

Air washing is an important part of central station air conditioning. The eliminator plates which are used to remove the entrained free moisture from the air also remove dust particles. The cleaning efficiency of air washing depends on the amount of eliminator surface exposed for contact.

Air filters are of various types, usually made up in smaller units which can be easily replaced or renewed. The filter medium may be either dry or viscous-coated, and of the cheap "throw-away" class of material or of the more expensive type which are worth cleaning and re-using. Efficiency of the various makes will range around 80 per cent or better.

Textile mills have for many years controlled the air conditions to obtain the maximum results from machinery. Now, in addition to maintaining a high machine efficiency they are striving to maintain a condition comfortable enough so that the employees will also work at high efficiency. It is still too expensive to produce a condition that will result in maximum efficiency from the help as this would require refrigerating equipment which is high in both first and operating cost, but a very decided improvement can be made by utilizing to the best advantage the cooling effect that can be obtained through proper humidification and ventilation. The use of controlled ventilation in textile mills will no doubt increase rapidly during the next few years.

An Old-Timer Short Shot

It was not so very many years back when an overseer got the job because he was a good grinder, a good fixer, or a good mechanic, but the time when experience alone will get a man a job is past. No one man's experience, by itself can keep pace with the experience of all the overseers and superintendents. This points out the wisdom of profiting by the other fellow's experience as set down in COTTON *and other magazines.*

Thirty Years a Superintendent

By W. L. DAVIS

THIS record of thirty years as a superintendent is notable, not only as an achievement within itself, but because it parallels a great portion of the growth of southern textiles. This account portrays the conditions at and before the turn of the century, and reflects the progress made since in so many respects. It will be reminiscent of the past for many another old-timer and will afford inspiration to many a younger man, starting or working on the path toward the goal of success as an operating executive.

The author writes out of an intimate association with his subject, and a lifetime in the mill during much of the period covered in this story. The article was prepared for and appeared in The Textorian, a newspaper published for the employees of the Cone group of mills.

JAMES A. BANGLE had been superintendent of Proximity Mill 30 years with the end of 1935. These 30 years span the greatest and most advanced epoch of American history and the history of the world.

Seven presidents of the United States and seven governors of his state have served while Mr. Bangle has been superintendent. Constitutional amendments have come and gone. Wars and rumors of wars, booms and depressions have tested his leadership and strengthened his faith in his God and his fellow man.

He rose from a fatherless lad of 12 at which age the responsibility of supporting a widowed mother and family of younger children fell upon his shoulders. He tried various hard tasks wherever he could earn an honest penny or portion of something to eat to carry home, until finally, he, weary and ragged, secured his first regular job in the old Vance Cotton Mill at Salisbury. There he clung desperately on to what appeared to be his greatest chance of earning enough to keep soul and body together and provide food for mother and the younger children.

His zeal and rugged honesty soon attracted the attention of his foreman, who moved him from job to job and taught him to fix machinery and grind cards. When that foreman moved to Proximity to be its first boss carder, he soon induced Jim to follow. After being assigned to several of the hardest jobs connected with building and getting the mill ready to run he was moved into the mill and in time became the first second hand and fixer in the card room. This job was not enough to satisfy or confine his energy and ambition for long. He was moved about on jobs in other parts of the mill and in other mills until he was made foreman of carding and spinning at night. He was changed from this job to that of foreman of spinning, spooling and warping on the day shift, and before the mill had been in operation ten years he had become its superintendent. Today he can look the world in the face with no apologies to offer for his 30 years' record.

Every machine in every department has been changed at least once since Mr. Bangle became superintendent. Not a single style of cloth of the more than 24 styles is of the same construction or made from the same numbers of yarn. No dyestuff is derived from the same source or applied in the same manner. The cotton mill industry has fully kept the pace in this fast age of mechanical development. The mills that did not have farseeing executives and hard working managers and superintendents have long since folded their hands across and have no jobs today to offer to any people.

When Mr. Bangle was a beamer the wet warps threw muddy muck in his face as long as he had his foot on the pedal. That was one of the things somebody had to undergo if anybody wore blue denim.

When he operated and stripped his first cards, he turned doffer and cylinder with his left hand while he curried with his right. His left hand had to become calloused as a mule's hoof before he could work efficiently around cards. All the flats had to be entirely removed from a card and taken to another place to be ground.

Nobody knew or used any better shuttle than the "suck type". Every yard of denim that was woven had to have someone to change the filling by hand one or more times. Every four minutes a weaver had to go to a loom, replace the filling by hand and restart the loom. Even as late as the World War if a weaver stopped four minutes to talk about a returning son, brother or sweetheart, every loom of her set stopped. Truly the looms were kept producing "by hand".

The change in the loom's efficiency since he became superintendent has been fully as great as changing from a buggy or a bicycle to a modern automobile or motorcycle.

Mr. Bangle's mind has always been keen to observe and adopt the developments of this mechanical age that has brought more changes in the lives of mankind than any previous hundred years in the history of the world. When the motor car became the accepted mode of travel he was quick to trade his black race horse, take a correspondence course in automobiles and become the first authority on the subject in his town. He has in his files personal correspondence from Mr. Henry Ford written when that great auto manufacturer was struggling with his product and was anxious to have someone undertake to handle his cars throughout North Carolina.

It is said that Mr. Bangle was so impressed with the motor car replacing the horse everywhere that he took it as a matter of course when he found rubber in his sausage.

He still scans the pages of trade papers searching for greater developments. He likes to find out what is happening before some competitor does lest that competitor find and use something to make his mill run better and cause Mr. Bangle's mill to lose time. He worked with all his might to help the generation that has passed protect and improve the jobs for this one, and is fighting to help the present generation save a job for the next. He battles with the thought that it takes a lot of thinking and hustling to make a mill or any other kind of enterprise go on and on, but that ignorance, indolence or disloyalty can easily and surely shut anything down forever.

He stood shoulder to shoulder with Caesar and Moses Cone, Bob Campbell, Tom Gardner, J. E. Hardin, Bob Sims, Horace Pennington, and the thousands of others who gave their best, returned to their maker and left to the thousands of others the joys and sorrows of carrying on. Nobody gets more joy out of doing their best than he. Theodore Roosevelt himself never believed more in strenuous endeavor.

The story of a man whose success in rising to the very top in leadership and influence in his life work, in such short time, rivals the most romantic of Alger stories and would be only half told if we could not examine the man personally.

How did he get his education? His mother had

(Continued on page 123)

Waste in and Around the Mill

WHEN WE SPEAK of waste in a cotton mill our thoughts at once run to certain sources of waste, such as:

Good fibers being drawn into the dust room.
Excessive fly.
Good fibers being taken out at the cards.
Uneven run-outs on the section beams.
Too much reworked waste going back to the opening room.
Too much filling waste being left on the quills.

These are among our most prolific sources of waste. This fact causes so many eyes to be turned on them that the waste from other sources is sometimes unnoticed.

It is thought that the most worth-while article on waste will be one that tries to call to mind sources of waste that are not so well known as to be constantly supervised, and therefore more susceptible to improvement.

We often make waste by faulty handling of materials. In this line it is easy to try to stick too closely to a standard, or to some condition that has existed for a long time but is not necessarily the best.

Most mills use a standard twist factor of about 4.75 for warp yarns made of short cotton and coarse numbers. It is not always economical to stick to a definite factor. In fact, it is wrong to stick to one factor for all qualities of cotton even though all of the cotton is rated 7-8-inch to 1-inch middling. It is undoubtedly true that there is a big variation in different batches of cotton of the same rated staple length. Some lots of 7-8-inch to 1-inch cotton will be soft, and have at least half of the fibers of less than ¾-inch in length. When such lots come through, we should be able to forget the standard twist factor and put in enough twist to obtain good running work.

The space around an elevator entrance is often crowded with men waiting to ride to another floor with some materials. This source of waste can often be remedied by making room around the entrance, thus allowing the operator to load and unload materials. The regular workers on each floor could then move loads to the elevator door, and "empties" away.

IN THIS ARTICLE the author doesn't discuss waste as you are accustomed to thinking of it. He has hunted out some unfrequented nooks and corners in the manufacture of cotton goods and exposed them as hidden sources of waste. Whatever is not usefully employed, whether it is floor space, man power, moisture regain or what-not—is waste, just as much as careless spoiling of roving or yarn is waste. This article discusses some of these points, in a way that will interest you. It will do the most good if it causes you to investigate some of these conditions in your own plant . . . .

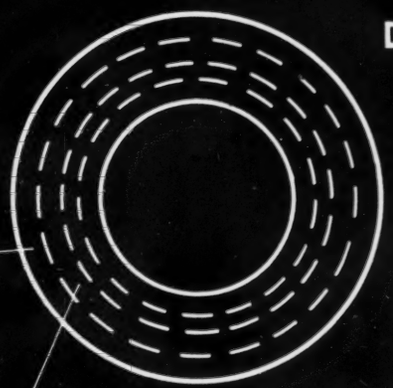
◆ ◆

While waste of loom supplies is one of our regular sources of waste, and one that can often be remedied by a periodic check on the cost of supplies used, waste of loom-time will bear inspection. This waste of loom-time is often brought about by trying to make a weaver handle too many looms. A weaver who can get 90 per cent production on 12 looms may drop his total to 80 per cent production if put on a stand of 14 looms. This is not a far-fetched possibility; it often happens. We all know that a smooth running job is about half as hard to run as one where a little more work should be done than we are able to do. A weaver overtaxed by two additional looms may readily lose control of the job and be unable to keep near his full production.

This last source of waste is often aggravated by putting "extra" men in a section where the regular operatives seem to be overtaxed. These extras are company-paid men and the condition that makes it necessary to put them in an alley should be remedied before their services become necessary.

We make waste when we give a good duck weaver a set of looms for making fancy materials and expect him to keep up the good work he has been doing on ducks. Some weavers dislike certain types of weaves very much, and it certainly pays to keep the weaver in accord with the type of fabric being woven.

Waiting for the elevator—a waste of time and man power



DOUBLE COVER — DOUBLE WEAR

A heavy layer of tough cover stock built in under the outer braid keeps Goodyear Wingfoot Air Hose serviceable even after the outer cover is completely worn away — gives double service!

THIS CUT-DOWN SECTION SHOWS YOU

why Wingfoot Air Hose — *developed out of Goodyear's intimate experience with the textile industry* — is the longest-wearing ever built for mill clean-up work . . . Its center tube is specially compounded to resist the deteriorating action of oil passed from the compressor . . . It is sinewed with a sturdy carcass of braided high-tensile cotton cords that absorbs the strains of flexing and dragging . . . And its DOUBLE COVER is extra-tough to resist cutting and abrasion by concrete floors, sharp-corners, tools and machine frames . . . Let the G. T. M. — Goodyear Technical Man — prove its *lowest-cost* service to you. Write Goodyear, Akron, O., or Los Angeles, Calif. — OR THE NEAREST GOODYEAR MECHANICAL GOODS DISTRIBUTOR.

THE GREATEST NAME IN RUBBER

GOODYEAR

WINGFOOT AIR HOSE

We make waste by faulty handling of men. A weave department consisting of four rooms is now being run to better advantage by one overseer and four second hands, than it was formerly run with four overseers and four second hands. A small department with one overseer and one second hand, both of whom remained in one room all of the time, is now being run as well as ever without a second hand.

Lack of records, or inaccurate records, constitutes a source of waste.

A system of weighing certain of the wastes from fly-frames, warpers, drawing-in machines, looms, etc., would do much to lessen such waste. This checking would best be done by some man not connected with the particular department. He should be a man who could calculate percentages and make correct reports.

Accurate, Preserved Records are Important

Waste from a room may be running a "little high", or a "little low," but that method of estimating would not exist if the waste in the department was weighed regularly and made the subject of a report. These reports would show at a glance whether the percentage of waste was getting out of bounds, and the cause could be investigated.

An overseer of slashing who knows that he is expected to keep the percentage of waste from the slashers and draw-in machines at less than one per cent of the weight of the slashed yarn, is likely to put forth every effort to keep that percentage within bounds when he knows that copies of the waste report for his department are to be distributed weekly.

Similarly, the overseer of weaving will see that the yarn on the loom beams is completely used if he knows that the waste in his room must be weighed before it can be taken to the waste house.

The percentage of production from a weave room, when accurately kept, serves as an important gauge. These percentages tell about the weave room as a whole, and help in clearing up trouble with particular constructions. The price paid the weaver may be based on 90 per cent production. If the records show that, even with a good weaver, it is practically impossible to get 90 per cent production on this fabric, then the way is opened for adjustments. Similarly, an easy running fabric may not be produced at better than 70 per cent production. The records will show this and the cause for the trouble can be investigated.

A record of the strength and running qualities of the sized warp yarn will enable the superintendent to solve some of his problems. All of us know that a weave room "goes to pieces" at times. Periodic tests to find the percentage of size put on the warp yarns will enable him to see if a new batch of starch, or a new kind of size, has caused soft warps to be made. In case such trouble is found it may then be corrected before the weave room suffers.

The mere fact that a sized yarn looks and feels good in the slasher room does not mean that it will act well in the weave room. A size mix that appears good in the slasher room may break down in the weave room. Tests will show that the strength added by a size will often show to better advantage when tested under fairly dry conditions than when tested under the high humidity conditions that exist in the weave room.

A record that is not properly kept is worse than no record at all. When an experienced overseer looks at a set of section beam weights that read something like this: 441 Lbs. — 440 Lbs. — 441 Lbs. — 442 Lbs. — 441 Lbs. — and so on down the column, he knows at once that the record is not worth anything. Section beam weights just naturally do not run as evenly as they are often shown on the record books.

In some places the second hand is required to record the wet and dry bulb readings shown by the thermometers in the automatic humidity control box in his room. These readings are to be taken at 8, 11, 3 and 5 o'clock each day and sent to a central office to be consolidated with similar reports from other departments. The consolidated report to be turned over to the office. These readings get to be so regular at times that the person who consolidates them can put down the readings from some of the rooms without looking at the report because he knows that the readings are set down the same on wet, dry, hot, or cold, days. In fact these "readings" have been known to be taken at 3 and 5 o'clock on Saturday afternoons even though the mill never runs on Saturday afternoons and the "reader" was not at the mill.

Get Proper Equipment and Save Waste!

Lack of proper equipment and improvements constitutes a source of waste. In order to investigate the effect of an item of newer and better equipment in a weave room, I gathered filling bobbins from several looms in a room where an old type feeler was used and compared the waste on these bobbins with that made in another weave room where a newer and better type filling feeler was being used. In both cases the goods being made were of the same variety and width and used the same filling yarn. The filling made in one spinning room was used in both of the weave rooms, so the bunches were the same. After stripping this waste from the quills, weighing and averaging them, I found that it took waste from 1,570 quills where the new feeler was being used, to equal the waste from 942 quills where the older type feeler was being used. In other words, this piece of newer and better equipment was making only 60 per cent as much quill waste as was the older type feeler.

A fine warp yarn is being made in the same mill from two different hank rovings. The finer roving is spun on the regular three roll spinning frame. The coarser roving is spun on a new type long draft spinning frame. I found by test that the yarn made from the coarser roving, on the long draft spinning frame, was equal in every way to the yarn made from the finer, using the short draft spinning frame. The finer roving requires one more process on the fly-frames than does the coarser, and is necessarily the more costly.

We make waste when we try to use too fine a reed

You can change numbers

MORE EASILY WITH THIS NEW COT

ANY normal range of numbers may be handled without premature buffing of Armstrong's *Extra Cushion* Seamless Cork Cots. That's because Armstrong's new tubular process of manufacture assures cots that have uniform density from end to end! Thanks to this, these cots have little tendency to hollow out . . . no hard shoulders to prevent proper contact. In addition, the *Extra Cushion* of these new cots makes them more responsive to the weight on the rollers thus doubly insuring good line contact.

And easier handling in changing numbers is only one of the big advantages these new *Extra Cushion* cots offer you! They produce stronger, more uniform yarn, improve Monday morning start-ups, and run better even on old frames.

We'd like to send you *all* the facts about these new *Extra Cushion* cots . . . also samples. Just write Armstrong Cork Products Company, Textile Division, 923 Arch Street, Lancaster, Pa.

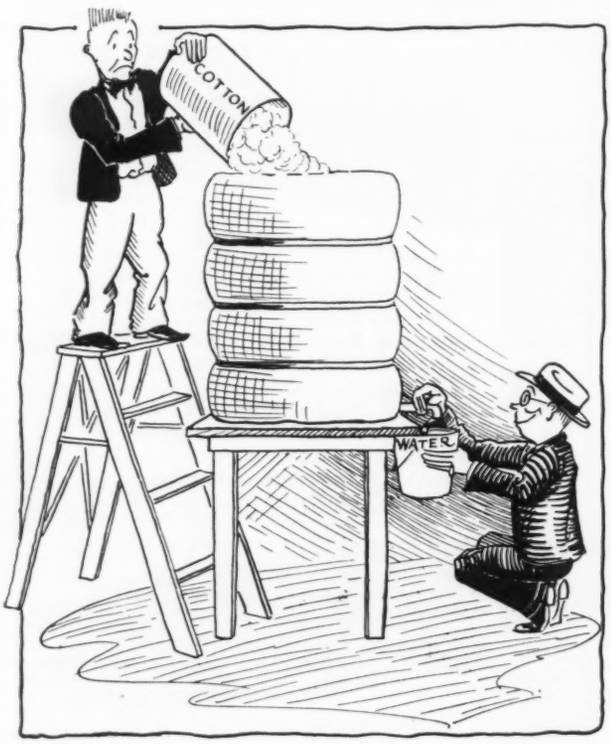
Armstrong's Extra Cushion **SEAMLESS CORK COTS**

for Spinning and Card Room Rolls

on a fabric. We need a fine reed to get a smooth face on the goods, but when the reed is so fine that the weaver loses production because the knots do not get through, then we are making waste by overdoing the use of fine reeds.

Lack of sufficient humidifying equipment is an outstanding source of waste. While this holds true for many departments of the mill the one which we want to bring out here is the waste brought about by lack of sufficient equipment in the cloth room.

It is an indisputable fact that the amount of moisture regain in a bale of cotton goods varies with the amount of water in the air where the goods are stored. Records kept to show the relation of the amount of water in the air to the amount of regain in the



Inadequate humidifying equipment is expensive

goods stored in that air, show that the goods gradually absorb the moisture from the air and come to a balance, with the percentage of moisture regain in the goods somewhat below the percentage of moisture regain in the air. The goods will obtain this balance with more or less speed, depending on the construction of the goods. Osnaburgs, or other goods of low counts and coarse numbers, will reach this balance much quicker than broadcloths, or other goods made of high counts and fine numbers. Similarly, cotton roving will absorb moisture much quicker, and attain this balance much quicker, than will cotton yarn.

Moisture in the cloth room often drops to around 40 per cent relative humidity with a corresponding 5½ per cent moisture regain. The amount of regain in the freshly baled goods depends to a large degree on the amount of time the goods remain in the cloth room before being baled. It may happen that the goods came from a weave room where a high percentage of relative humidity is maintained with a resulting ten per cent moisture in the goods. If such goods are put through the burling, folding, inspection, and baling, processes in the cloth room, in some two hours, they will not have lost all of the ten per cent moisture regain. They will have dropped down nearer the 5½ per cent regain of the cloth room but will still retain some seven per cent or eight per cent moisture regain. If this goods that comes to the cloth room with a 10 per cent regain happens to stay over night, or over the week end, in this cloth room atmosphere with its 5½ per cent moisture regain; the cloth will have lost its surplus moisture and will have dropped to a moisture regain of some six per cent.

Getting the Right Regain in the Cloth

The mill is entitled to more than six percent regain. Standard moisture regain is that regain which the goods will acquire when stored in a standard atmosphere, and this, in turn, is the air condition where the relative humidity is 65 per cent with a temperature of 70 per cent Fahrenheit. Goods stored long enough in this standard atmosphere to come to a balance will contain about eight per cent moisture regain. So a mill is entitled to ship goods with approximately eight per cent regain unless the buyer specifies some other percentage for the goods.

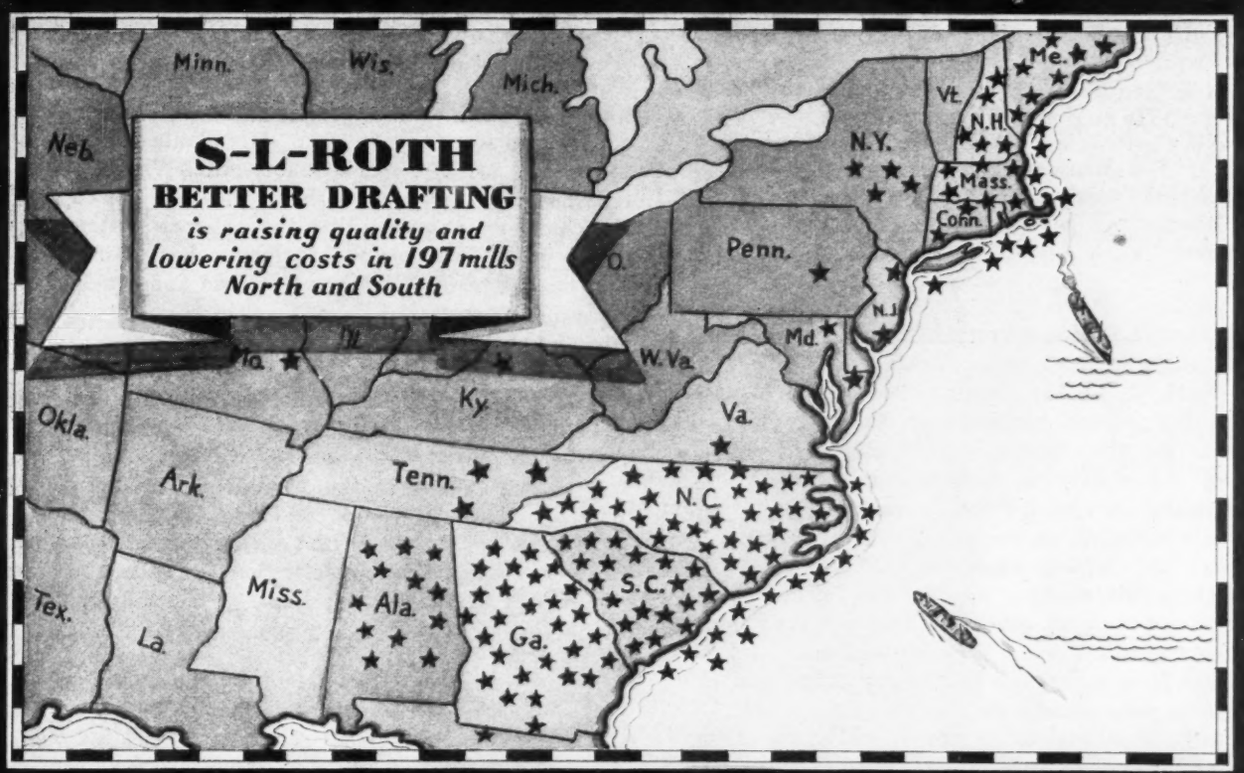
If the cloth room relative humidity stays consistently far enough below this standard condition to cause the goods as baled to average only six per cent moisture regain, the mill is losing a big portion of the profit on this one waste. Assuming that on the average only ½ of one per cent is lost in this way, then for a mill which produces 150,000 pounds of goods a week, it will be seen that this loss amounts to 750 pounds, and this is equivalent to a considerable amount of money.

In order to obtain the proper weight for the goods, this lack of moisture is made up by the use of good cotton, and that is where the loss comes in. When the heat is turned on the cloth room with the coming of cold weather, the weight of the baled goods shows light because of the drying out effect of the heat. We then heavy up on the filling yarns to bring the cloth weights back to normal. The result is that we are adding weight by the use of more cotton where we should be properly equipped to hold the moisture up to standard condition in spite of the drying effect of the heat. The same procedure is followed every time the weather man gives us a long dry spell and causes the weights to get light.

It would be possible to regulate the weight of baled goods somewhat on the order of the method used in many mills to regulate the weight of the picker lap.

Before we could regulate the weight of the baled goods in this way we would have to work up a chart showing the relation between the moisture in the air, as shown by a hygrometer, and the moisture in the goods. From this chart we could then correct the weight of the baled goods to balance the under or over supply of moisture in the air.

15% of the active U.S. Spindles are now Saco-Lowell-Roth ("LONG DRAFT")



—An overwhelming preference for Saco-Lowell

Quality with Economy and Simplicity

Adopted usually because it reduces manufacturing costs, Saco-Lowell-Roth Spinning carries with it a "bonus" in the form of improved yarn quality—an improvement so important that this system has been adopted as standard equipment by mills producing the finest quality yarns. For further information write Saco-Lowell Shops, Boston, Charlotte, Greenville, Atlanta.

Where quality yarns are spun, expect to find Saco-Lowell-Roth Spinning

SACO-LOWELL-ROTH BETTER-DRAFT SPINNING

Problems of Fine Yarn Manufacture Discussed by Gaston Spinners

THE Gaston county mills started the ball rolling for 1936 on practical discussion, with their meeting in Gastonia last Monday, which is fully reported here. The discussions pertained largely to subjects applicable mainly to combed yarns, though much in this report will interest men in other types of mills as well . . . . . .

AT THE Gaston County Division of the Southern Textile Association meeting held in Gastonia, N. C., Friday, January 24, questions directly pertaining to combed yarn manufacturing were discussed. Marshall Dilling, superintendent of the A. M. Smyre Manufacturing Company, presided and most beneficially brought informal queries to the attention of the association as the regular questions were discussed. Mr. Dilling explained that because of local conditions this meeting was the first held in Gaston County in two years, also that the questions submitted by the committee were quite simple and elementary, but that from experience he had found that the simple questions were usually the most overlooked and hence apt to be beneficial to all present. The superintendents and overseers were vitally interested in a discussion of the mill problems and although it was bitter cold, there were about 90 members present.

Spinning Value of Different Cotton Crops

The question concerning the relative spinning value of the cotton crops for the last five years was taken up first. H. G. Winget, superintendent of the Victory and Winget mills was at that time preparing data on this question but the reports were not quite ready. However, he thought that the 1935 crop gave a better breaking strength than that of any year since 1931. He also disclosed the fact that the breaking strength of the 1932 crop was 13 per cent below that of the previous year. Mr. Dilling was of the opinion that the 1931 crop was the worst in many years; he explained that the 1935 crop was grown under similar conditions but that he was getting better results from it than from the 1931 crop.

When called upon, W. N. Williams of the Rex Spinning Company offered, "I found that the '32 crop was better than the '31, the '33 was fair, but the '34 crop was better than any." Here Mr. Dilling asked him what staple he ran and what was the effect in using shorter and longer cotton. Mr. Williams stated that he had used 1 5/32-inch cotton and had tried longer cotton but found no better results.

The chairman called on A. P. Richie of the Dixon & Trenton Mills for an opinion and he remarked that since 1931 the cotton crop had seemed to improve and that he had found the 1935 crop easier to clean and that it gave a better breaking strength, spun better, and seemed to run more even. His plants were using 1 1/8-inch to 1 7/16-inch cotton. Mr. Winget added that he had noticed more fly in the 1935 cotton and the chairman observed that the 1¼-inch cotton was not so good from this standpoint as the 1⅛-inch but that he was really limited in this field and could offer no authentic statement.

Methods of Mixing Waste in Combed Work

The next question as to the best method of mixing sliver, roving, and underclearer waste was gone into rather fully by D. H. Whitener of the Myrtle mill. "We run all our waste on the finisher picker using the Kirschner beater. We put one lap on the front and one on the back of the apron and spread the waste evenly between them. We then take that lap and run it on the finisher with three other laps. When this final lap is carded the sliver is kept separately and run in the ribbon lapper in the proportion of one to four. That is, we run five of the waste slivers into 15 of the regular stock. This proportion is kept constant all the time."

MARSHALL DILLING, superintendent of the A. M. Smyre Manufacturing Co., who presided at the Gastonia meeting . . . . . .

Mr. Winget added that his mill used the same system.

The chairman inquired as to the difference in the running of the cards on the waste lap as compared with the regular lap. Neither Mr. Whitener nor Mr. Winget could see any difference in the stock but Z. G. Holtzclaw, also of the Myrtle mill, contended that the cards running the waste lap should be ground more often than the others.

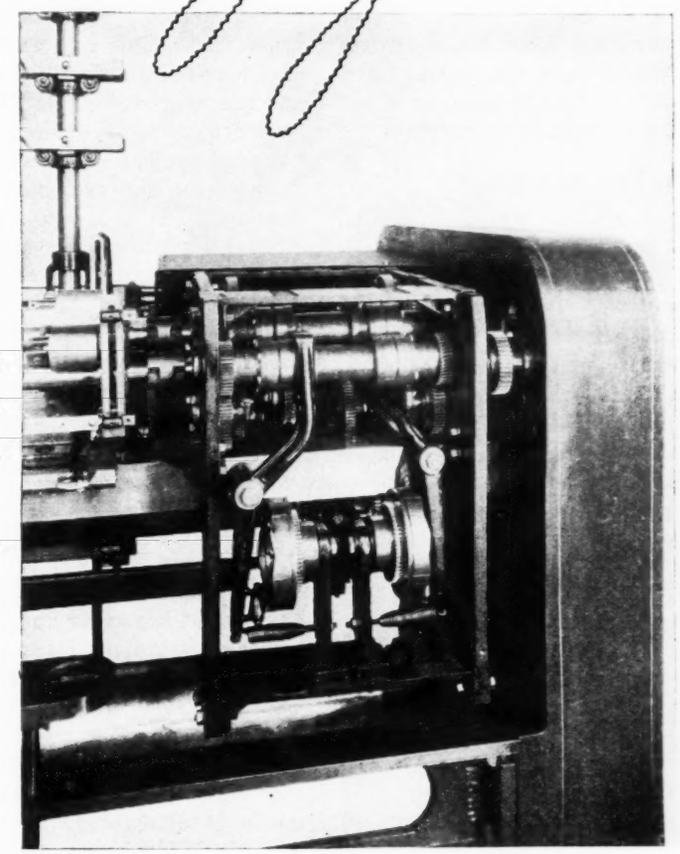
Mr. Williams explained that his plant ran the waste in a waste machine one time, using a double beater, and then fed it very slowly on the apron going to the pickers. He had tried to feed the waste directly on the apron but the numbers ran uneven until he had acquired the waste machine.

J. W. Long of the Goldberg mills used the same system as Mr. Whitener but could see no difference in the stock or the condition of the cards using the waste laps.

Going on to the next question relative to the set-

Reported by John C. Fonville

NEW *Novelty Yarn* TWISTER



This twister is specially designed to make commercially the novelty and fancy yarns that are frequently required to produce certain style effects in fabrics. It has a wide range of adjustment and is provided with simple but effective means for producing practically any yarn combination and any type of fancy twist. Its mechanical features are as follows:—

1 Two lines of bottom rolls and two lines of top rolls.

2 These rolls can be automatically operated to intermittently stop and at the same time to operate at varying speeds.

3 All change gears are readily accessible.

4 Our patented reversible tape drive can be furnished with this machine, so that the twist can be readily changed. Only a few minutes are required to make the change.

5 The cams are very accessible and can be easily adjusted or changed.

6 Patented yarn controller guide.

H & B AMERICAN MACHINE CO.

COTTON PREPARATORY AND SPINNING MACHINERY

PAWTUCKET, R. I.

BOSTON OFFICE, 161 Devonshire Street CHARLOTTE OFFICE, 1201-3 Johnston Building

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ting of the feed plate to the licker-in, the chairman stated that he believed more bad work came from improper setting at this point than from anything else in the card room. Several carders considered that a setting of 10/1,000-inch was about right. J. J. Duncan of Belmont had tried a closer setting, using a 13-ounce lap, but had gone back to the 10/1,000-inch setting. Also, when he had changed over from 1 1/16-inch to 1 5/32-inch cotton, he had not moved his settings and still got good results. When the chairman asked him whether he would open the setting if a heavier lap were run, he replied that he thought so but off hand could not say for certain.

Setting of Feed Plate to Licker-in

William McLoud, Rhyne-Houser Mill, Cherryville, N. C., thought a setting of 14/1,000 on the licker-in was good on 1 7/32-inch cotton, while Mr. Richie considered that if cleanliness was sought a setting of about 8/1,000 could be used and if a higher breaking strength was needed that a setting of 12/1,000 would do the work. If both cleanliness and breaking strength were desired it would be best to divide the difference and run a setting of 10/1,000.

At this time Mr. Williams brought up the point that carders would have to take into consideration whether the feed plate had a long nose or a short one.

H. GILMER WINGET, superintendent, Victory and Winget Yarn Mills, who participated in the Gastonia discussion, and was elected as a member of the division committee .

He set his long nose feed plates a little closer. On 1¼-inch cotton he set long nose feed plates at 12/1,000 and his short nose ones at 15/1,000.

Mr. Whitener added that he used to set his feed plates to licker-in at 12/1,000 but had trouble in getting the proper breaking strength. When he opened them up to 17/1,000 he got the required breaking strength but could offer no statement as to the cleanliness of the stock.

H. C. Dover said that he set his anywhere from 5/1,000 to 17/1,000 but got better results at 10/1,000. This was on 1 5/32-inch cotton, 14-ounce lap, and carding 5½ pounds an hour.

Speed of Licker-in

When Mr. Dilling put the next question which concerned the best speed for the licker-in, he also asked if the carders knew the speed before the questionnaire was sent out. To this he got no answer.

G. R. Russell of the Rex Spinning Mill thought that the speed run was all according to the cotton used and the numbers being made. He ran his at 325 r.p.m. and 450 r.p.m. and got good results from both speeds but had made no tests on either.

Mr. Dilling stated that he had cut his speed down to 297 r.p.m. on 1¼-inch cotton and had got good results but when he cut his speed on shorter staple, it did not improve the quality of his carding. He further stated that he did not know the cause but probably it was because in the case of the shorter staple he was putting through more cotton.

Mr. Holt contended that cards of different make often had different size lickers-in thus giving a different surface speed, which was really what had to be considered. This reminded Mr. Williams that he had once heard of a licker-in that was 20 inches in diameter and ran very slowly. It seemed that the larger licker-in had more teeth and gave better results. This was not an American card as he remembered but it would do well for the mill men to give the subject some thought.

Mr. Whitener had cut his speed from 450 r.p.m. to less than 300 r.p.m. on long cotton and had got better results. He then cut his speed on shorter cotton and still got better results but later went back to a high speed on the short cotton and the carding was not as good. This showed, he thought, that lower speeds on the licker-in were advantageous to the carding.

Effect of Card Cylinder Speed on Yarn Strength

The chairman went on to the next question pertaining to the effect of high and low cylinder speed on the breaking strength of the yarn. Mr. McLoud recounted that at one time he had changed the pulleys on some of his cards and by mistake the cylinder was making 180 r.p.m. He noticed that the yarn was considerably weaker but he didn't know if the high speed was the cause of it. He believed, though, that too high a speed would tear down the breaking strength. This was the general opinion offered.

"What effect will light or heavy card sliver have on the breaking strength of the yarn?" was next taken up. Mr. Winget remarked that "we would have to consider the draft further along in the manufacturing process—if we have to draw it later on to get the proper weight, there is more of a chance of getting an uneven result."

Mr. Whitener brought up the question of the effect of a higher or lower draft, at the card, on the breaking strength. Those who discussed this question held that too high a draft tended to reduce the breaking strength.

Straightening Presser Fingers

Mr. Dilling then asked the question, "Will straightening the presser fingers have any effect on the roving or yarn?" and at the same time explained that some of the mills are straightening the presser fingers because of larger size bobbins.

Mr. Russell answered that he thought it would pay a mill to straighten the fingers. Doing this would give a much more uniform bobbin. When asked as to how much curve he took out, he replied that about one-third was the usual amount but that the straightening depended on the hank roving more than anything else.

Mr. Williams said that he has tried straightening the presser fingers in two mills and that it gives a more uniform bobbin. He straightens the crook just

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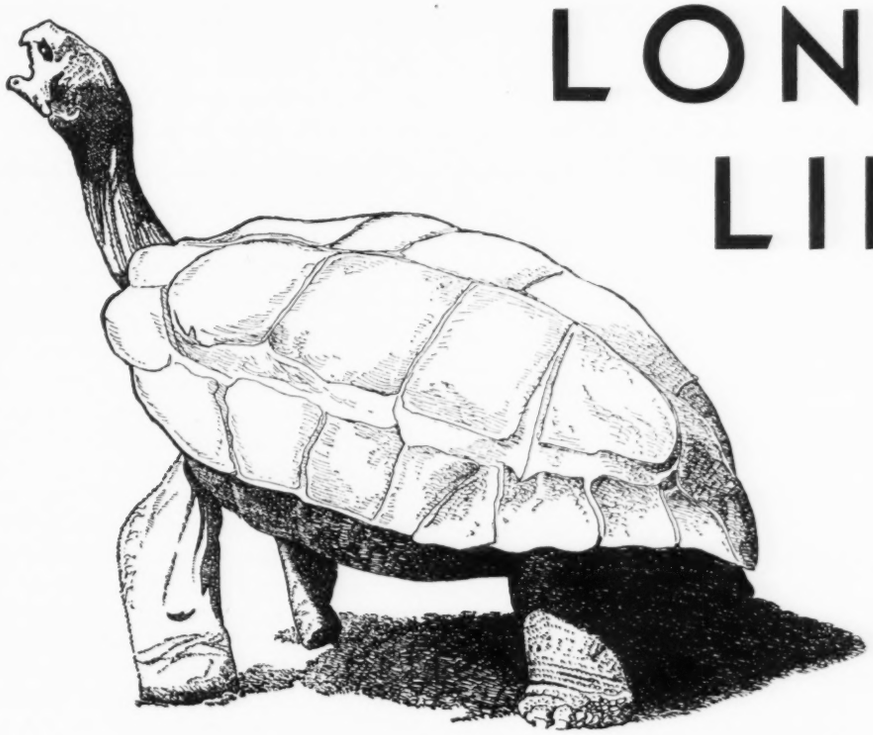

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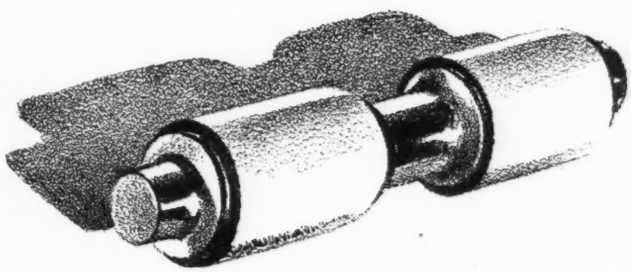

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so that the roving will follow the curve. If the presser is short it produces too hard a bobbin, he explained, and it is necessary to experiment with two or three fingers before changing them all over. He further stated that besides the uniform work secured as a result of this, his breaking strength was increased.

Limitations of Draft

"What is the limit of draft each way on various numbers and staples of cotton?" came next. This question did not apply to long draft spinning. Mr. Winget considered 10½ to 11 as an ideal draft but had run 50s with a draft of 14. The latter was most too much, he thought. He had also used a draft of 8 but said that his spinners complained of the roving running out too quickly.

G. R. Grice did not consider going below a draft of 10 a good policy and had run a draft of 18 on 36s yarn. He said that using a draft of 15 and 16, he had secured good breaking strengths.

D. R. LaFar was called on and expressed the opinion that it all depended on the trade for which the yarn was made, but that he usually catered to a draft of from 9 to 11½.

Mr. Richie considered that with a medium draft in the card room a draft of 12 was proper in the spinning room for plied yarns, but if making single yarns that a draft of 9.5 or 10 would give more even spinning and suit the yarn trade better.

Mr. Whitener said that he thought the whole question of drafts was a puzzle because he had experimented on drafts from 8 to 16 and couldn't tell much difference in the yarn—however, he thought 8 was too low and 16 too high a draft.

Mr. Williams thought that the staple of the cotton was most important because the longer the staple the higher the draft that could be run.

There was very little offered on the question as to whether the weight of top twister rolls has any effect on the breaking strength of ply yarn, but all agreed that it was a question that should be studied. Mr. McLoud contended that the heavier the top roll is, the more regular the twist will be, but that damages are caused from excessive weight, such as cutting threads, etc.

When asked "Which is the best, long or short stroke, fast or slow speed traverse of thread guide on twisters?", Mr. Winget replied that he "wouldn't want to see the traverse go too fast but it should be long". Also the speed doesn't make so much difference on coarse counts, but it does on fine numbers. Above certain numbers, he doesn't believe in putting yarn around the roller because it makes kinks which give the plied yarn only the breaking strength of a single yarn.

Mr. McLoud said that he liked the slow speed traverse better, and Mr. Dilling added that he approved of a long and slow traverse more than the short and fast one, but that often it was necessary to change other settings to get the desired result. Mr. McLoud uses emery paper on his rolls at every creel and hopes ultimately to eliminate threads wrapping around the bottom brass roller.

As the question of the value of re-working spinning and twister rings was put, Mr. Dilling reflected that not many years ago he could not get the work done by any concern but that now a great many mills were having this conditioning done.

Experiences with Re-Worked Spinning and Twister Rings

The men that had already had the work done were thoroughly satisfied with it: Mr. Long, "We had our twister rings re-worked and they haven't worn any in five years"; Mr. Gunter, "We have had eight frames running now about four months and we're getting good results, but the people working with them have to be careful with them—ours are as good as new for the time being"; Mr. Richie, "We do not know if the re-worked ring has the life of a new ring, but if the work is properly done it should give satisfaction"; Mr. Whitener, "Some of our rings came back with a sharp edge but they were probably too far gone in the first place"; Mr. Goldberg, "We have had 36 twisters re-worked and they are as good as new; next week we are beginning to re-work our others". It was also stated that the same size traveler as previously used could be run on the re-worked rings and that the cost for re-working was from one-third to one-half the cost of new rings; it was held, though, that there is an age limit as to when a ring can be reworked.

The last question on the list was concerning the best speed for high speed winding. Mr. Long thought there was a limit to the speed and gave an example of cutting his speed to 410 yards a minute to get the proper result. He said that his thread guide traveled so fast at top speed that the yarn caught and made slubs. Mr. Winget considered too high a speed on single yarn inadvisable but he gave no speed as an example. Mr. Goldberg added that a slower speed was necessary on coarse numbers than on fine ones and that a lot depended on the type of slub catcher in use.

The chairman then put a question as to the best twist for thread yarn which was answered by Mr. Winget who humorously suggested that they talk that point over in private.

This concluded the practical discussions and the business of the association was next taken up. The same committee was elected as held office last year with the addition of Mr. Winget. It will include W. N. Williams, J. W. Long, William McLoud, R. F. Harris, H. G. Winget, and Marshall Dilling, chairman.

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CURRENT TEXTILE TOPICS ....

Talk of the Month

ONE OF the first things that the older generations learned was the alphabet. If we are not mistaken, the schools have undertaken new methods in this "modern" world in which the alphabet is treated differently. Political leaders seem to have taken a leaf out of the school books and they have done some juggling with the alphabet themselves. Some of their work has been undone and more may be. The NRA is rapidly being relegated to the limbo of forgotten things and the AAA (the "tripped" AAA as some satirist has it) has been struck a lethal blow, but the cotton manufacurer still at end of January was faced with "what next?"

From the Abandoned NRA and "Tripped AAA" to What?

In all the alphabetical-mindedness of bureaucratic institutions, there has been little attention upon "p's" and "q's". There is another combination that the older generation was admonished to mind. The cotton industry, so long as it can operate to the full and favorably, is the greatest single industrial employer in the country. But the cotton manufacturers are forgotten men when the farmers are concerned. So when the Supreme Court has given the industry a respite and a hope, the threat of new legislation virtually to restore the processing tax from the mills, though disguised as an excise levy, comes along immediately.

In the long run, it is futile for the government to try uneconomic practices. Cotton goods have to be priced to suit the public will. They are the dependence of the masses, because of their low cost relative to other textiles. The mills have established minimum wages and regulated schedules of machine operation that were acceptable to the government. They have lost money under the process, as admitted in the findings of the Federal Trade Commission, representing the same government in investigating the industry.

This year promised, and still promises, a good demand for cotton goods. The industry has moved, through requests from the Cotton Textile Institute, for individual pledges to make doubly sure the permanence of the code measures found sound under the NRA. The courage to continue such measures in the face of the extra-industrial burden of a class tax was too much for many manufacturers and their plants succumbed. Others held on in the hope that the AAA would be invalidated, as it was. They will continue if given a fair break. Otherwise new liquidations are practically certain.

As stated, the cotton goods market must accommodate itself to the lower price ranges to succeed. It is the backbone of the textile industries because it is the dependence of the masses. The officials of the AAA last summer were forced tacitly to admit that artificial support of the cotton price above the world level was stifling demand and the export movement of recent months tends to confirm the position of trade observers that the American staple can recover its world position on a reasonable basis; even can sell profitably to the growers on a volume basis in a recovering world economic situation.

Relief for the unemployed and relief for the farmer must come from the profitably employed. The government can tax the stockholder who makes a profit on his investment and can tax the corporations on their earnings. It can also tax corporations out of existence and add to the unemployment burden that it is endeavoring to ameliorate. Some of the local mill communities are finding that out on their own score and taking steps to remedy the evil. The Federal government can supplement, or upset, this tendency.

Invalidation of the AAA on January 6 brought confusion, but we might say welcome confusion, for a time. There was evidence before the end of 1935 that a heavy volume of sales was in prospect for the first quarter of this year. Therefore, while business was temporarily held in abeyance by the uncertainty arising from the new condition the trade had no misgivings about the ultimate breaking forth of active purchasing in the goods market.

Among the salutary lessons of the last half of 1935 was that orderly production, if carried on, is certain to create a new attitude among buyers. Sellers have had to jump to the snap of the buyers' whip for years. The buyers apparently did not realize before the year-end holiday season that a new dispensation was in order. They found it out to their sorrow in many cases, because they could not get desired merchandise at short notice in a time of peak consumer demand.

If the industry is left free from new uneconomic legislation, the mill workers may find that they have cause for congratulation over failure of agitators to put over drastic labor legislation. Regulated production that forces buyers to anticipate requirements for a reasonable period ahead is a way to better distribution of manufacturing. This, with minimum wages, is an assurance of better earnings for operatives. The way (at the latter part of January) is open for good mill activity and employment, but much depends upon government and labor. The cotton industry has its triangle.

New England Mill Situation

COTTON MANUFACTURING in New England started the year in a complicated state, with several conflicting angles, yet a spirit of optimism. Leaders of big companies were at the same time reporting sad financial experiences of the past year and reporting prospects favorable for profitable operations. The one big exception was the Amoskeag Manufacturing Company, closed for several months, with resumption uncertain. Hopes of salvation for the plant were contingent upon many

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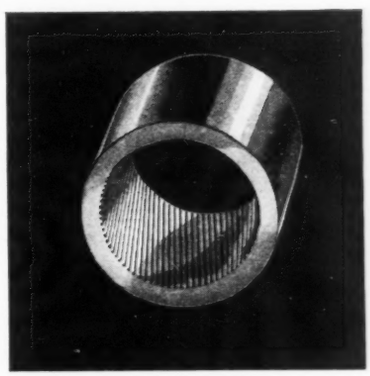

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factors, including notably the co-operation of public officials and labor.

Immediately after the announcement of the AAA invalidation Russell T. Fisher, secretary of the National Association of Cotton Manufacturers, voiced a New England opinion of the effect by stating that the "manufacturers are taking the decision in stride with the realization that they have cleared another hurdle barring the way to progress. Confidence in the future is apparent. It is the hope of this industry that the end of the processing tax marks the beginning of the end of legislation that is antagonistic to industry."

That was before the suggested possibility of excise-tax legislation. Apart from the Federal angle, Richard Lennihan, executive vice-president of the Nashua Manufacturing Company, a few days later stated that "the very apparent effects of the industry-wide curtailment program, in effect since the collapse of NRA, has left the New England mills in a position relatively stronger than that of a year ago. There is a decided trend toward stabilization."

Mr. Fisher cited as the most striking example of what persistent legislative restriction of industry can accomplish the fact that Massachusetts was most active in that direction between 1919 and 1929. "During that same period—the so-called boom period—the State suffered a drop of 156,638 in industrial employment. More than 2,000 Massachusetts mills and factories liquidated or left the State. Between 1927 and 1929, Massachusetts was the only industrial state that registered a loss in the number of industrial wage earners."

Perhaps because of some tendency toward leniency, or extra courage of those remaining in the mill business of the state at the start of 1935, that year was less disastrous in Massachusetts last year than previously. That does not mean that losses were stopped, as is well attested in the reports of the Pepperell and the Naumkeag companies, to mention only two. The Naumkeag case, obviously, was severely aggravated by the long strike.

In New Hampshire, the Nashua suffered a loss of $1,300,000 for the year. Mentioning the shut-down of the Amoskeag, Mr. Lennihan, in connection with the loss of his own great company, said "admittedly the New Hampshire cotton-textile industry is sick but it is not going to die. There is a struggle for survival. Nevertheless, with management carrying its major share of the burden and with other interested groups giving their support, I believe we can pull through." He said that there is an inter-dependence among management, employees and community that is undeniable.

Frank I. Neild, president of the National Association of Cotton Manufacturers, found "the steady and healthy growth of self-regulatory action" the outstanding development of the last year in the industry. Through a self-imposed curtailment program accompanied by a strong sentiment against accepting business at a loss, he said, the arrival of the fall selling season found the industry in an improved position. Continuance of this cooperative movement would mean more steady employment and greater prosperity in textile communities as well as a reasonable profit for investors.

Advices from Rhode Island stated that the industry entered the new year in the best position since 1929. This was a technical improvement more than a broad operating gain, but mill men were forecasting a substantially larger business in 1936 than for a long time. This was a decided improvement over the start of 1935, when the state began a year which was highly disastrous in mill casualties.

This state, the cradle of the cotton industry in the United States, suffered the loss of a score of mills before realizing the improvement recently noted. Part of its troubles were attributed to overcapacity, but the New Deal was charged with bringing the situation to its unhappy climax, with the elimination of many fine units among the casualties. As in other states, the industry is taking advantage of the first sellers' market for a long time to make new progress of a profitable nature.

Among the important early changes of 1936 was the vote of the Nashawena at New Bedford to reorganize its plant. The directors were empowered to restore the mill, closed last September, on a smaller scale. William B. Gardner, president, told the stockholders that the management had in mind a unit of approximately 62,000 spindles and 1,200 to 1,500 looms. The plant formerly had 194,700 spindles and 4,144 looms, employing 2,000 workers at capacity. It has manufactured plain and fancy fine cottons.

COMMENT ON THE COTTON MARKET

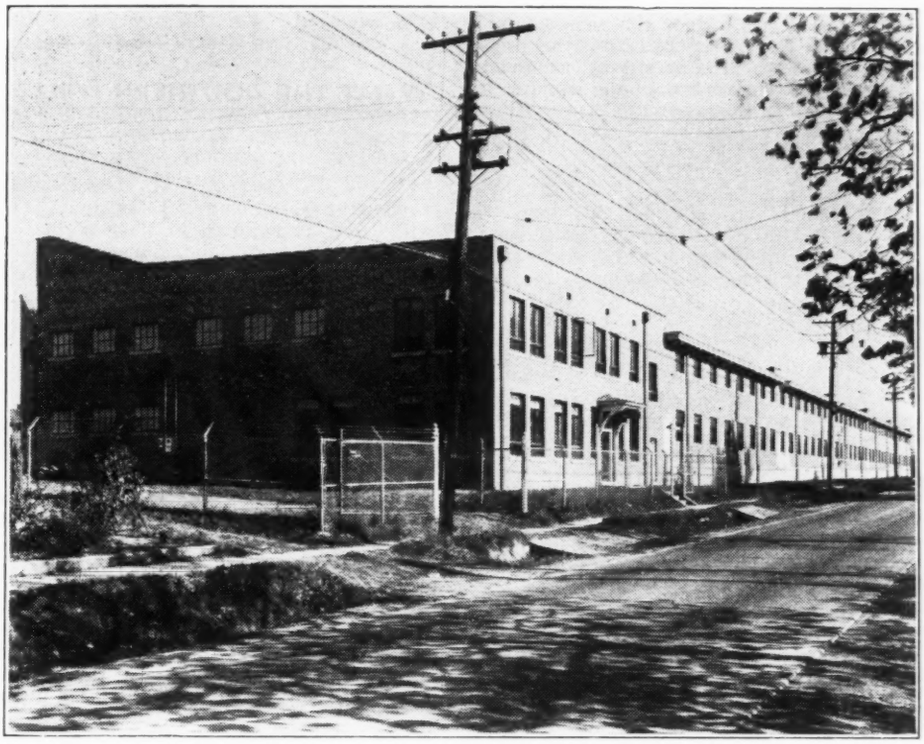
New Orleans, January 17, 1936.

DEVELOPMENTS during the past month, such as the sharp decline in silver, European politics and the President's message at the reconvening of Congress, and rumors that the government might receive cotton on contract, had their effect on values, but to a limited extent only. The principal disturbing and depressing factor during the period was the adverse decision of the United States Supreme Court declaring the AAA unconstitutional, which caused a progressively increased decline in values for some days following release of the court decision. However, considering the sweeping nature of the decision, involving the threat of unrestricted production this year, the market held better than generally expected, and recovered somewhat subsequently, especially in near positions and spots, which, compared with one month ago show a shade higher, but distant deliveries are moderately lower. This was probably due to President Roosevelt saying that agriculture continued to be his immediate concern, and because cotton administration officials stated that some plan would be evolved in time to cover the 1936 American crop. Secretary Wallace stated that a farm plan would be continued. The trade awaits with much interest the nature of the cotton control plans to be proposed, one of which may be adopted. Pending further developments as to proposals for crop control, encouragement was also derived from the continued good showing of domestic consumption, of the continued free exports and the continuance of liberal world spinners' takings of American cotton.

WORLD'S SUPPLY OF COTTON
ESTIMATES OF NEW YORK COTTON EXCHANGE SERVICE

Bales—	This season	Last season
Carry-over, Aug. 1—American	9,041,000	10,701,000
Carry-over, Aug. 1—Foreign	4,863,000	6,049,000
Crop, American	10,641,000	9,576,000
Crop, Foreign	14,900,000	13,036,000
Season's indicated supply	39,445,000	39,362,000

Last year's production of foreign cotton appears to be much larger than was expected earlier in the season, but this feature was offset in a measure by the smallness of last year's American crop compared with the early estimates. At any rate the world's supply of all kinds for this season is apparently about the same as it was last season. In this connection, it is encouraging to note that there was a re-



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vival in the demand for the American product this season in preference to foreign growths, due largely to the superior quality of American and the more attractive competitive prices, based on the 10-cent loan plan, which was more in line with world values.

The world's consumption of all kinds this season is estimated at 26,000,000 bales or larger, indicating the probability of a new high record, which is gratifying, particularly since there has been a world revival in the demand for American. Because of the very large holdings of old crop cotton by the government, there appears to be a limited supply of American free cotton available, which supply is likely to become scarcer as the season grows older if consumption continues to run larger than after this time last season unless some of the government controlled cotton is offered to the trade in volume. Thus far this season, compared with the same date last season, American spinners have taken 3,719,000 bales versus 3,221,000, and exports from the United States total 3,886,000 bales against 2,845,000, making the total distribution in this respect to date 7,605,000 bales versus 6,066,000, and increase thus far this season of 1,539,000 bales, whereas last year's production was only about 1,098,000 bales larger than the crop of 1934.

BRITISH BOARD OF TRADE REPORT FOR DECEMBER

Year—	1935	1934	1933
Exports of yarn, pounds	12,000,000	10,000,000	11,000,000
Exports of cloth, yards	148,000,000	161,000,000	156,000,000

CENSUS REPORT

Stocks in mills, public storage & warehouses, United States— Bales—	This season	Last season
Consumption of lint, December	498,329	417,344
For five months	2,415,888	2,134,094
Mill stocks, December 31	1,427,484	1,301,271
Stocks in public storage & warehouses, December 31	8,386,784	9,567,935
Stocks in mills, public storage & warehouses, December 31	9,814,268	10,869,206
November 30	9,975,939	11,098,146
Active spindles during December	23,391,370	25,072,972
Active spindles during November	23,193,734	25,072,392
Consumption of lint in Cotton Growing States, December	415,914	329,993
In New England States	68,526	67,188
In All Other States	13,889	20,163
In the United States	498,329	417,344
Consumption of lint in Cotton Growing States, five months	2,023,221	1,702,623
In New England States	321,839	334,933
In All Other States	70,828	96,538
In the United States	2,415,888	2,134,094

AMERICAN COTTON

August 1st to January 17th— Bales—	This season	Last season
In sight (marketed)	10,175,000	7,456,000
Exports from the United States, inc. Canada	3,886,000	2,845,000
Spinners takings, world	6,621,000	5,816,000
Stock at all United States ports today	2,604,000	2,930,000

WORLD'S VISIBLE SUPPLY OF COTTON

January 17th— Bales—	This year	Last year
American	7,057,000	7,248,000
Other Kinds	1,574,000	1,964,000
All kinds	8,631,000	9,212,000

The Cotton Goods Markets

While there has been a slowing down in the spot demand since the recent court decision on the AAA, reports are to the effect that there is more activity in the domestic cotton goods markets as result of the downward revision of prices for textiles, due to the invalidation of the processing tax by the Supreme Court, and that manufacturers and merchants are more cheerful as to the future and look forward to a year of more activity in the cotton textile trade of this country.

Preparations for the Next Cotton Crop

There appears to be ample moisture in the ground for early farm work. In fact, work was delayed somewhat except in the southwestern portion of the belt, and plowing was almost at a standstill, due to wet soil, especially in the northern portion of the cotton region where there was rain, sleet and snow. The recent low temperatures, however, were of benefit to the soil, and probably killed a large number of insect pests. Reports from many districts of the interior are to effect that, since the AAA was discarded, farmers are slow in making preparations for the new crop, and that the WPA projects are attracting much labor from the fields. However, if the acreage is controlled, farm help will likely be ample.

While there is nothing definite as yet as to the nature of proposals to control this year's acreage, the impression prevails that some form of crop control will probably be decided upon by the administration and farm leaders in time to cover the 1936 crop. Late Washington advices indicate that the administration proposes to base its new farm program on the Soil CoCnservation Act and that only minor legislative measures will likely be necessary. This statement, if confirmed, may help to get the plan working sooner than expected.

What the Southern Mills Are Doing

Canton Cotton Mills, Canton, Ga., have installed another Super-Sanforizing machine built by The Textile-Finishing Machinery Company, Providence, R. I.

Dwight Manufacturing Company, Alabama City, Ala., will make an addition to their plant to include a slasher room and space for more machinery.

Camilla Hosiery Mill, Camilla, Ga., damaged by fire a few weeks ago, is being rebuilt and re-equipped. The new plant will be somewhat larger than the old one.

Cambra Silk Company, Philadelphia, Penn., will erect a hosiery mill in Douglas, Ga., and will operate under the name of Enterprise Promotions, Inc.

Massachusetts Knitting Mills will construct and equip a plant in Philadelphia, Miss., which will employ 650 operatives.

American Enka Corporation, Asheville, N. C., will replace a half million dollars worth of machinery this year due to obsolescence.

Cooper Wells Company, Decatur, Ala., will make a $50,000 addition to their plant.

Buck Creek Cotton Mills, Siluria, Ala., have installed a Hermas shearing machine in their cloth room.

The Daisy (Tenn.) plant of the Richmond Hosiery Mills has been consolidated with the main plant at Rossville, Ga.

Charters have been granted to the Parkway Hosiery Mills, Inc., Asheville, N. C., Rutherford Mills, Inc., Belmont, N. C., and Hill Spinning Company, Roseboro, N. C.

A one-story addition is being made to the Greensboro Weaving Company, Greensboro, N. C. This addition, which is 120 feet by 140 feet, will practically double the size of the plant.

Pilot Full Fashioned Hosiery Mill, Valdese, N. C., is enlarging its present plant. It has also installed 21 new machines.

Hanes Hosiery Mill, Winston-Salem, N. C., is installing a new lighting system in its offices.

Springs Cotton Mills have announced that they are making an addition to their Gayle plant at Chester, S. C. It will be 125 feet by 50 feet and will house the Barber-Colman spoolers and warpers and approximately 100 additional looms.

The Jac Feinberg Hosiery Mill, Rock Hill, S. C., is improving the layout of the plant which will allow more machinery to be installed.

A charter has been granted the Tennessee Hosiery Company, Inc., Chattanooga, Tennessee.

The building and machinery of the Bassett Knitting Mill, Bassett, Va., have been purchased by J. D. Bassett, Sr., and associates. It is expected that the mill will commence operations in the near future.

The Pannill Knitting Company has purchased the machinery of Wm. Sloane & Company, Norfolk, Va., and will move it to their plant at Martinsville, Va.

The Philippi Blanket Mills, Philippi, W. Va., which have been idle for a number of years, will install new machinery and resume operations.

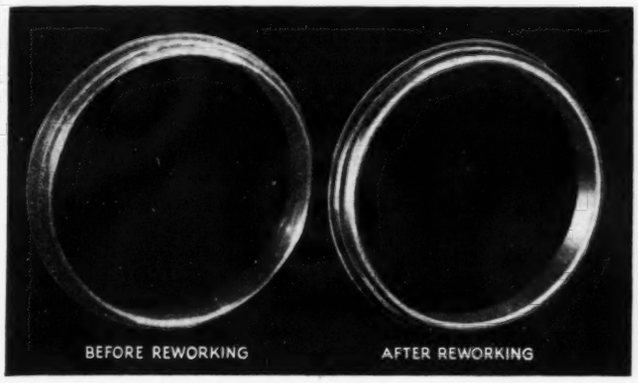
Broad Silk Company, Hanover, Pa., will locate a pure silk mill at Victoria, Va.

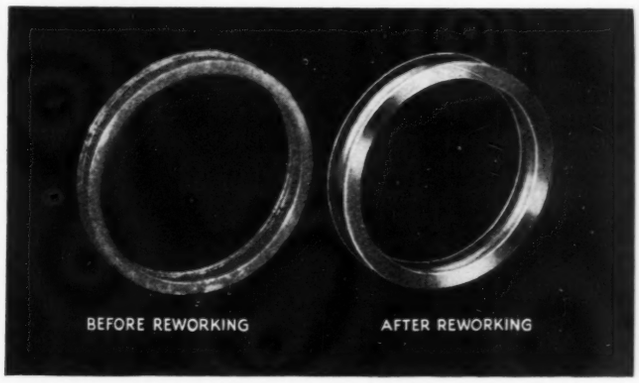
Harrill Knitting Mill, Rutherfordton, N. C., is installing 132 new knitting machines, some of which will make fancy half-hose.

A charter was granted the Blackston Hosiery Mills, Inc., Valdese, N. C. The plant will make hosiery and other textile fabrics.

Bogle-Watkins Corporation, Burlington, N. C., manufacturers of men's half-hose, have installed 60 new knitting machines.

Your Old Rings Made New At Half the Original Cost





GET your old worn rings out of the junk pile — twister rings, spinning rings, wet twister rings, any kind—and you can save at least 50% over the cost of new rings by having them renewed by GOSSETT—repaired and finished to exact size.

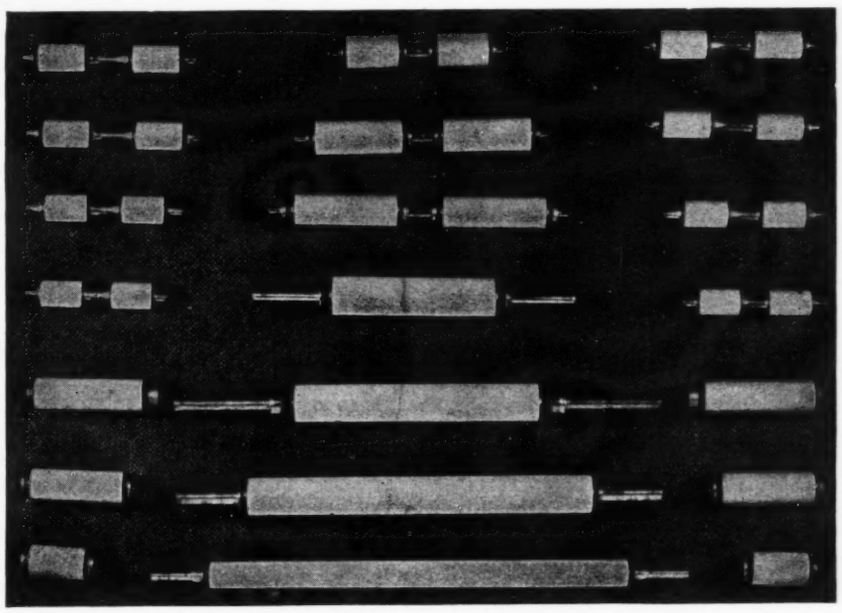
GOSSETT'S method of reworking worn rings, enabling you to get double service from your rings, is the result of exhaustive study on the part of our engineers. The method is covered by U. S. Patent No. 2025881 and is used exclusively by GOSSETT.

Prices on any job, large or small, sent gladly on request. For a trial of GOSSETT quality work and quick service, mail us a worn ring today, then you be the judge.

GOSSETT MACHINE WORKS, INC.
GASTONIA, NORTH CAROLINA

Rebuilders also of Spindles, Flyers, all makes Steel Rolls. Spindles Regrooved at your Plant.

"GOSSETT HAS ONLY ONE GUARANTEE, THE WORK MUST BE SATISFACTORY OR HE EXPECTS NO PAY"



Predominating!

Even felt cloths can stand out in their field, as is proven by the unanimous approval of "Philadelphia" throughout the textile industry.

Roller Cloths of the correct cushion and uniformity.

Clearer Cloths with thick strong nap that cannot pull out. Uniform length that clears rolls entirely of short fibre.

Slasher Cloths with enough cushion and porosity to thoroughly force sizing into yarn.

Philadelphia specializes in Stamping Blankets, Palmer and Sanforizing Blankets for Finishing, and Lapping Cloths for Printing.

We will gladly assist you on felt cloth problems. Write us today.

PHILADELPHIA FELT COMPANY
FRANKFORD, PHILADELPHIA, PA.

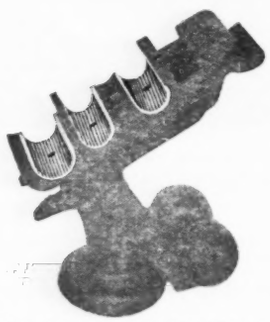
Philadelphia *Felt Cloths*

PROVEN IN SERVICE

New Textile Equipment and Publications . . .

Graphited End-Stand Inserts for Spinning Frames

Johnson Bronze Co., 530 South Mill Street, New Castle, Pa., have announced the development of graphited end-stand inserts for the roll stands on spinning frames, embodying the application of the company's bronze bearings

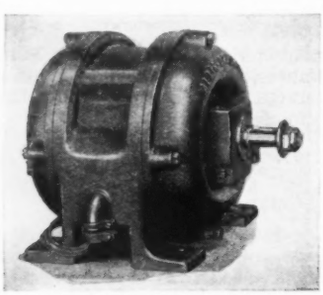


Graphited end-stand insert

impregnated with graphite at this point. In this type of bearing, it is pointed out, 40 to 45 per cent graphite contact with the shaft provides the necessary lubrication while retaining the required bearing characteristics; the graphite is held permanently in place by grooves cut into the bearing surface at a 7 degree lead. Thus, in the new application, oiling is eliminated and maintenance economies and increased efficiency effected.

Individual Loom Motor

Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, have announced a new loom motor designed especially for individual drive. It is claimed this motor has a high efficiency and power factor, low slip, and close speed regulation from no load to full load. As shown in the accompanying illustration, the motor is encased to prevent defects caused from dust and lint. The stator frame is of cast steel with feet cast integral and the stator coils are insulated against moisture. The new motor is available in from ½ to 2 horsepower sizes for either 2 or 3 phase 60 cycle operation with voltages from 220 to 550.



New loom motor

New Daylight Lamp

The General Electric Vapor Lamp Company, Hoboken, N. J., has announced for immediate release a "circular mercury-incandescent" lamp which throws light very closely resembling daylight. The new unit is a combination of the mercury-vapor tube and the incandescent lamp blended to give proper color perception. Since this blending is additive, the full light value of both tube and lamp are utilized in the new method. Both the lamp and the vapor tube may easily be removed for cleaning.

Circular mercury-incandescent lamp

New Sizing Material for Acetate Yarns

A new sizing material for acetate and other synthetic yarns has been developed and is being manufactured and marketed by E. F. Houghton & Company, Philadelphia, Penn. It is said that this new material, Houghto-Size A. C., may be used on acetate yarn without indifferent results occasionally happening. It is soluble in hot water but its sizing value is ruined by boiling. Being highly concentrated, only a minimum amount is needed to penetrate and coat each filament uniformly. Houghto-Size A. C. may be used on colored warps without dulling the colors and it contains the necessary preservatives to keep it free from alteration by mold, mildew, and acidity.

The Houghton Company has also announced a new boil-off agent known as Scourol W. P. Powder.

New Bulletin Released

Allis-Chalmers Mfg. Company, Milwaukee, Wisconsin, have released a revised edition of their bulletin to include their recently extended line of Duro Brace Texsteel sheaves for stock drives up to 15 horsepower. The dimension tables of all the sheaves, complete horsepower and center distance tables for stock speed ratios, and price list tables for various standard lengths of texrope belts are given in this bulletin.

Booklet on Mercury Vapor Lamp

The Benjamin Electric Manufacturing Company, Des Plaines, Illinois, have published an attractive 28-page bulletin in the form of a booklet, *High Intensity Mercury Vapor Lamp Fixtures*. This bulletin gives data on the new 400-watt lamp, how it operates, its color, composition, and advantages, for various types of interior and exterior illumination. It is illustrated.

High-Voltage A-C Contactor

A new high-voltage alternating-current contactor, employing the oil-blast principle of arc interruption and intended for use in completely oil-immersed motor controllers requiring moderately high interrupting capacity, has been announced by the General Electric Company, Schenectady, N. Y.

The contactor is rated 200 amp at 2,200 to 4,600 volts, and will interrupt 50,000 kva. It is latched in, and is tripped mechanically on short circuit by an instantaneous over-current relay. Thermal-induction relays give inverse-time protection for the motor in the event of sustained overloads, and time-delay undervoltage protection is also provided.

Patents Granted

According to Paul B. Eaton, patent attorney, Charlotte, N. C., a patent has been granted to Charles R. McGhee and Bryant W. Gossett who have succeeded in perfecting a machine for re-finishing textile spinning and twisting rings. The machine is of the centerless grinder type, yet it cuts all portions of the ring to equal thickness. Several of these new machines are now in operation.

J. Gottlieb, president of Threads, Incorporated, was granted a patent relating to a colored cap to be inserted over the end of a yarn cone before the thread is wound thereon. By this invention, the manufacturer need only to stock one supply of plain cones and then stick the caps on as he desires to fill an order.

John M. Bell of Chester, S. C., was granted a patent for a viscosimeter.

Write Us a Letter!

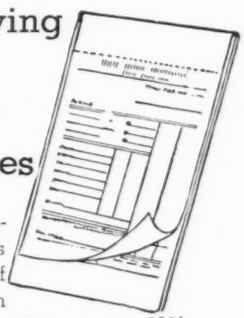
Isn't the Possibility of Saving Money worth the Time it Takes?

Textile mills everywhere are today benefiting from economies that we have been able to suggest to them.

All you have to do: Send us samples of the various envelopes you are using, specifying the quantities of each style that you buy. If the envelope is used for any unusual purpose mention that.

We'll then be glad to make a detailed study of each envelope. If we are able to suggest changes in the paper stock or in the methods of manufacture that will result in savings, we will gladly do so. No obligation on your part. No more time than it takes to dictate a short memorandum.

A Double Saving on 4-in-1 Pay Envelopes



Four-in-One Payroll envelopes have always cost less — because of the time they save in the payroll department. The recent 20% reduction makes their cost even lower. Investigate. The Four-in-One is:

[1] A time and wage statement
[2] A deduction statement
[3] An employee receipt
[4] A payroll envelope

ATLANTA
Envelope
COMPANY
505-7-9-11 Stewart Avenue, S. W.
ATLANTA
[Established 1893]

Stonhard

BUILDING MAINTENANCE MATERIALS
KEEP THE WHEELS OF INDUSTRY TURNING ECONOMICALLY

Insure your business against losses from
ACCIDENT
AND
CURTAILED PRODUCTION
due to faulty floors. Your floors can be made fit for your business with---

STONHARD RESURFACER

The handy man around your plant can make permanent repairs to ruts or can resurface your runways or entire floors, regardless of type. Smooth, serviceable floors make for profitable mill operation.

STONHARD CONCRETITE will produce a floor resistant to wear, acids, oil, water and temperature. It materially reduces the time necessary for repairs and resurfacing.

WOOD FLOOR PRESERVATIVE puts new life in your mill floors. It eliminates dust, splintering and checking and facilitates cleaning.

There is a STONHARD MAINTENANCE MATERIAL for every textile mill problem. It can be purchased on the following terms:—

A portion may be installed in order to determine its suitability for the particular condition. Pass our invoice for payment only if you are thoroughly satisfied. If the results do not meet with your approval the balance of the material may be returned and we agree to cancel our invoice.

WRITE TODAY
for an inspection by our engineer--no obligation -- or tell us in detail of your problem and we will advise you on the repair of your floors, roofs, or walls.

STONHARD COMPANY
401 NORTH BROAD ST., PHILADELPHIA, PA.

New Fin-Type Heating Unit

For the heating of air-conditioned railway cars and buildings, a new fin-type Calrod heating unit has been devised by the General Electric Company, Schenectady, N. Y. The unit consists of a steel-sheath Calrod heating element with steel fins copper-brazed to the steel sheath. This brazing provides thermal contact between the fins and the unit sheath and delivers an increased amount of heat.

Low-Voltage A-C Contactor

General Electric Company, Schenectady, N. Y., have a new low-voltage alternating-current contactor which will remain closed during voltage disturbances or failure. The new contactor is closed by a direct-current magnet energized through a copper-oxide rectifier and is held closed by the attraction of a permanently magnetized core and the movable armature. The permanent magnet is made of a new alloy called Alnico which retains its magnetism indefinitely. The new device is free from the hum experienced in a c contactors and has no coil losses while closed.

Combination Magnetic Switches

A new line of combination magnetic switches introduced by the General Electric Company, Schenectady, N. Y., with maximum ratings of 25 horsepower at 220 volts and 50 horsepower at 440 volts to 600 volts parallels, but does not supersede a G-E line of similar ratings incorporating a magnetic switch with overload relays for motor running protection, all in the same enclosing case. In these new switches, air circuit breakers which can be reset by hand after tripping are used instead of fused safety switches. The breaker operating handle is interlocked with the enclosing case door so that it cannot be opened when the breaker is closed and the breaker can be locked either open or closed from the outside of the case.

New Thermal-Induction Relay

A new thermal-induction relay designed for use in oil-immersed motor controllers, which has tripping characteristics such that difficulty in starting high-inertia loads at full voltage is eliminated, has been announced by the General Electric Company, Schenectady, N. Y.

In the new relay, a series line-current coil produces a flux in a magnetic core, and induces a current in a copper sleeve about this core. Heat from this copper sleeve is directly conducted and radiated to a bi-metal strip whose deflection causes a set of contacts either to open or to close. The contacts, normally closed, have a slow-opening action, preventing too quick tripping on overloads.

Shipper-Rod-Operated Master Switch

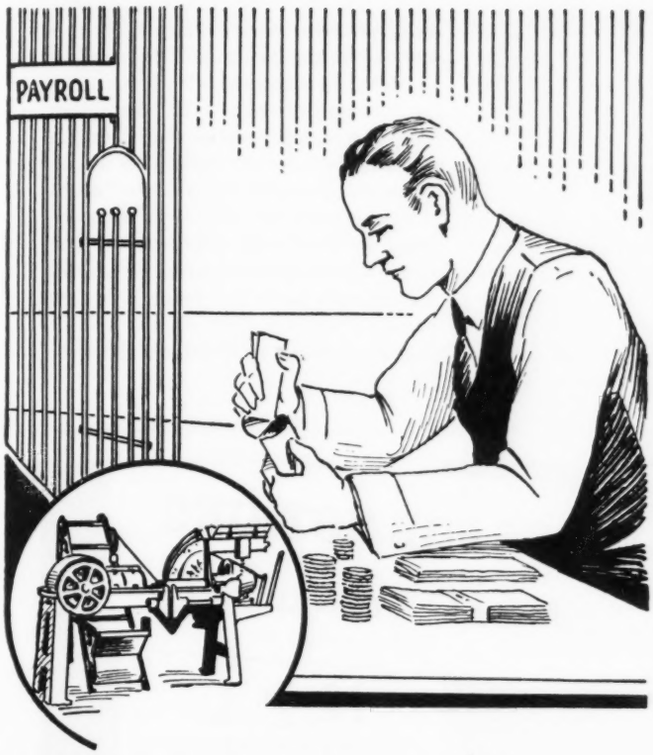
A new shipper-rod-operated master switch, which performs the function of a two-button momentary-contact push-button station, has been announced by the General Electric Company, Schenectady, N. Y. Its magnetic contactor will pick-up and seal-in even when the shipper rod is operated rapidly and will drop out and remain unenergized, in the case of voltage failure, even when the shipper rod does not complete its travel. A short time delay between making and breaking the pick-up circuit is employed, so that this circuit will always be broken after it has once been established, regardless of the position in which the shipper rod is left.

TIMELY NEWS ITEMS WITH A TEXTILE SLANT . . . .

Exhibitors Display Interest in Exposition

That plans for the Southern Textile Exposition to be held April 5th to 10th inclusive, 1937, are well under way has been revealed by William G. Sirrine, president and treasurer of the Textile Hall Corporation, Greenville, S. C. Much interest has been displayed on the part of the exhibitors. Those companies having contracted by late January for space at the Exposition include the following:

Abbott Machine Company; Aldrich Machine Works; Allis-Chalmers Manufacturing Company; American Cyanamid & Chemical Corporation; American Enka Corporation; The American Brass Company; American Wool & Cotton Reporter; Armstrong Cork Products Company; Armstrong Machine Works; Arnold, Hoffman & Company; Ashworth Brothers; Bahan Textile Machinery Company; Bahnson Company; Barber-Colman Company; Belger Company; Charles Bond Company; Borne Scrymser Company; Brown Instrument Company; H. W. Butterworth & Sons Company; Clinton Company; Clipper Belt Lacer Company; Continental Diamond Fibre Company; Cook-Taylor Company; Corn Products Sales Company; COTTON; Crane Company; Crocker-Wheeler Electric Manufacturing Company; Crompton & Knowles Loom Works; Crouse Hinds Company; Curtis & Marble Machine Company; Diehl Manufacturing Company; Draper Corporation; Du Pont Rayon Company; Eclipse Textile Devices, Incorporated; Fafnir Bearing Company; Fairbanks, Morse & Company; Fibre Specialty Manufacturing Company; Finnell System, Incorporated; Flintkote Company; Foxboro Company; General Electric Company; General Electric Vapor Lamp Company; Gerrard Company; Graton & Knight Company; Howard Brothers Manufacturing Company; Huntington & Guerry, Incorporated; Hyatt Roller Bearing Company; International Nickel Company; Jenkins Brothers; Johnson Bronze Company; Keever Starch Company; A. C. Lawrence Leather Company; Lestershire Spool & Manufacturing Company; Thomas Leyland Machinery Company; Leyland-Walsh Company; Marchant Calculating Machine Company; Mathieson Alkali Works; Merrow Machine Company; Miller Company; New Departure Manufacturing Company; New York & New Jersey Lubricant Company; Norma-Hoffman Bearings Corporation; Penick & Ford, Ltd.; Permutit Company; Phipps & Bird, Incorporated; Power Transmission Council; Powers Regulator Company; Reeves Pulley Company; Republic Steel Corporation; J. E. Rhoads & Sons; Rhode Island Warp Stop Equipment Company; William C. Robinson & Son Company; B. S. Roy & Son Company; Saco-Lowell Shops; Sherwin-Williams Company; Singer Sewing Machine Company; J. E. Sirrine & Company; S. K. F. Industries, Incorporated; Southern Shuttles, Incorporated; Steel Heddle Manufacturing Company; Stewart-Warner Corporation; Stein, Hall & Company; Charles H. Stone; C. J. Tagliabue Manufacturing Company; W. O. & M. W. Talcott, Incorporated; Taylor Instrument Company; Terrell Machine Company; Texas Company; Textile Bulletin; Textile Finishing Machinery Company; Textile Specialty Company; Textile World; Toledo Scale Company; Universal Winding Company; U. S. Gutta Percha Paint Company; U. S. Ring Traveler Company; Veeder-Root, Incorporated; Walker Electrical Company; Watson-Williams Manufacturing Company; Wellington Machine Company; Westinghouse Electric & Manufacturing Company; Whitin Machine Works; and Whitinsville Spinning Ring Company.



$2600.00 *Saved on Payrolls Yearly*

With its new Type K Bobbin Stripper, a New England mill is saving twenty-six hundred of the dollars it has been spending annually on labor alone . . . **a net return on the investment of slightly more than 200% per year.**

Wouldn't you like to make a record such as this in your mill for 1936?

"This machine was installed at an operating speed of 104 bobbins a minute, cleaning celanese on a brass shield enamel bobbin," our salesman reports.

"Six employees were required to do this work prior to the installation of the machine. With the machine only two are necessary, and if it were not for the fact that the yarn is quite strong and badly tangled, one operator could care for the job. Even with this condition, however, the mill is able to make a saving of four employees at $13 a week each. This totals $2600 for 50 weeks."

That is why sales on the Type K machine are climbing so rapidly. *Mill executives are realizing they cannot afford to be without it.*

Write for booklet about the Type K machine. If you wish, we will gladly send a man to make a free investigation and report on your bobbin cleaning.

the new* TYPE K *Bobbin Stripper

The Terrell Machine Co., Inc.

1200 North Church Street
CHARLOTTE, NORTH CAROLINA

Mr. Luther Pilling, Danielson, Connecticut, *Representative for N. Y., N. J., Pa., New England States, and Canada*

Geo. Thomas & Co., Ltd., *Manchester, England, European Agents*

The revival of business...

. . . and increased sales volume will require increased working capital. We not only assume credit risks, but cash and carry to maturity the accounts against your customers arising out of your sales.

We would be pleased to have you write us.

TEXTILE BANKING COMPANY

53 MADISON AVE.
NEW YORK

Keyway Cutter Handled by Matthews Morse

The Threadwell Tap & Die Company of Greenfield, Mass., have appointed Matthews Morse Sales Company of Charlotte as the exclusive dealers in North and South Carolina for their keyway cutter for cutting internal keyways.

Mills Install "Minerol"

Borne Scrymser Company of New York announce the following mills in this country have placed orders with them to install their "Minerol" system of conditioning cotton: Amazon Cotton Mills, Thomasville, N. C.; Asheville Cotton Mills, Asheville, N. C.; Mollohon Plant of Kendall Mills, Newberry, S. C.; Kendall Mills, New Bedford, Mass.; Sibley Manufacturing Company, Augusta, Ga.; and Phenix Mills, Kings Mountain, N. C. Also the following plants in foreign countries have arranged to use "Minerol": Danubius Textilwerke Aktiengesellschaft, Czechoslovakia; Cia. Ind. de Parras Mills, Mexico; and a mill in Ahmedabad, India.

Gotham Handles Erwin Advertising

According to Joshua L. Bailey & Co., sales representatives of The Erwin Cotton Mills Company of North Carolina, the Gotham Advertising Company will handle the advertising of their textiles. Advertising to the trade will be continuous throughout 1936.

Hosiery Shipments Well Sustained

Figures released in January by the National Association of Hosiery Manufacturers in its monthly statistical bulletin show that demand for hosiery in November, 1935, continued well above the same month of the year previous. Total shipments for all types were 10,231,026 dozen pairs, or ten per cent more than in November of 1934. For the first eleven months of 1935, shipments of all types of hosiery showed a gain of 7,406,864 dozen pairs, or almost eight per cent above the comparable period of 1934.

Production of hosiery was regulated by manufacturers with a cautious eye toward changes in seasonal requirements. As compared with October, production in November was curtailed for practically every type of hosiery and where gains were recorded they were small. In all cases except that of anklets, where a seasonal gain in stocks is to be expected, manufacturers' supplies on hand were reduced.

In a review of specified types of hosiery, the bulletin points out that the decrease in November shipments of women's full-fashioned hosiery, following the extraordinary demand in October, was paralleled by a sharp curtailment in production, which brought about a reduction in stocks. The bulletin states that replies to a questionnaire recently sent to the full-fashioned industry regarding curtailment plans, indicate very strongly that a substantial reduction in production took place late in December and early in January when demand is normally slack. Developments in men's half-hose, women's seamless goods, children's goods, woolen and ribbed goods, and cotton bundle goods reflect seasonal influences. In all of these cases, November production approximated or was lower than shipments and the position of stocks, as compared with a year ago, shows improvement. On the other hand, the bulletin invites the attention of manufacturers of anklets to an increase in stocks of this class of goods to a new all-time peak. It is interesting to note that shipments of silk goods, woolen goods, and those classes of children's goods not made of ribbed material for the first eleven months of 1935 exceeded shipments for the entire year 1934.

HE WORKS FOR NOTHING
.. yet he costs you plenty
N. P. L.
(NEEDLESS POWER LOSS)
EVERYWHERE N.P.L. is a drag on efficiency. Daily he holds back the wheels of progress, and is the cause of costly shutdowns. He is an expensive parasite, costing you plenty every day. Morse Positive Drives, properly engineered and installed, will eliminate N. P. L.

FOR STEADY, POSITIVE OPERATION

Morse chain drives are dependable, transfer power continuously, conserve power, increase machine output and at the same time reduce power and transmission costs. Short centers permitted by chain drives save production space, provide better lighting and operating conditions. Unless you are using chain drives, you are wasting power. Ask for more information.

MORSE CHAIN COMPANY
Division of Borg-Warner Corporation
ITHACA - - NEW YORK

Send for a Morse Silent Chain Drive Selector

MORSE *Positive* DRIVES
SILENT CHAIN and ROLLER CHAIN DRIVES • COUPLINGS • CLUTCHES

Special attention is given in the bulletin to the statistical position of raw silk, since most manufacturers of women's stockings are now issuing new price schedules. The conclusion is reached that available supplies during the remainder of the crop year July 1935, through June, 1936, will be considerably smaller than for the corresponding months in the preceding crop year. Demand, on the other hand, is running currently ahead of last year and is expected to continue to do so. Consequently, the bulletin states that the rise in the price of raw silk in recent months seems statistically justified.

Boulware Manager for Carrier

Lemuel R. Boulware, who has been general sales manager for the Easy Washing Machine Company of Syracuse, New York, has been elected director, vice-president, and general manager of the Carrier Engineering Corporation, manufacturers of air conditioning equipment. Mr. Boulware was formerly general sales manager of the Consolidated Press of Hastings, Michigan, until it was purchased by E. W. Bliss Company. He remained with Bliss Company until 1920 when he joined the H. B. Sherman Company of Battle Creek, Michigan. The selection of a general manager to head all operating functions is a new policy with the Carrier Engineering Corporation.

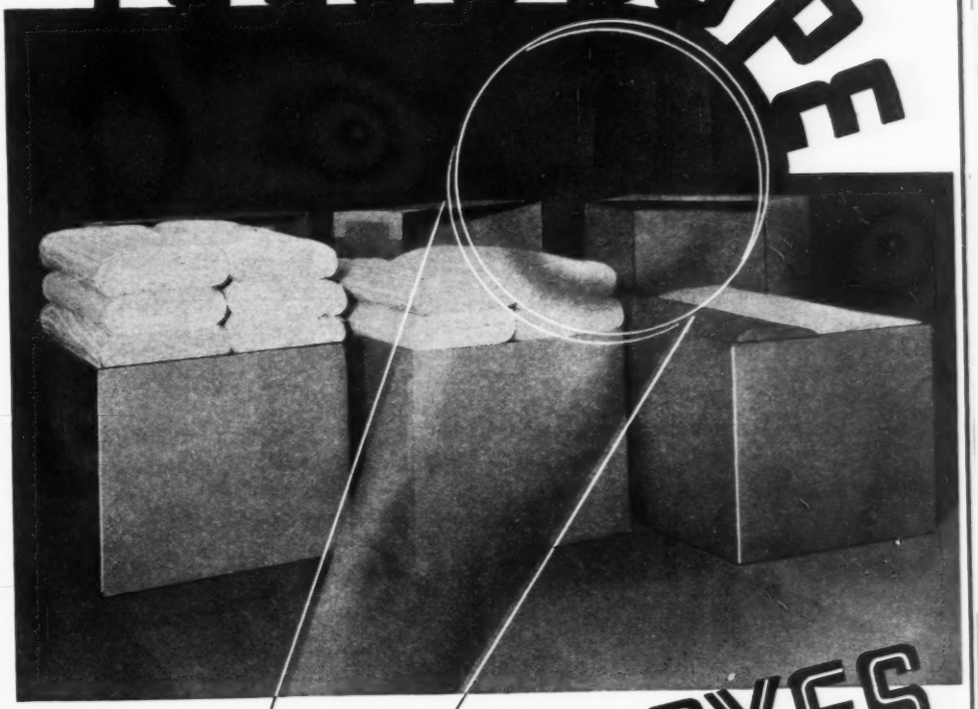
Crane Company Announces Research Division

A new division of research and development has been created by the Crane Company of Chicago to enhance progress in its diversified fields. The units comprising the division are for field research, industrial products, plumbing products, and heating products. There are separate laboratories for research testing and metallurgical research. This new division will centralize work formerly handled by various departments and subsidiaries. M. W. Link will be director with Messrs. Parks, Houser, Olson, Zinkil, Magos, and Lange as engineers of the various units.

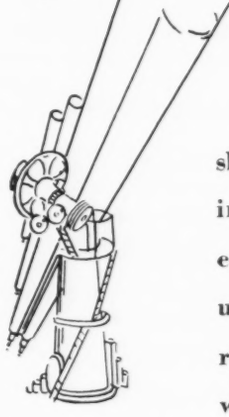
Taylor Durham Represents Textile Banking Company

Taylor R. Durham, secretary of the Southern Hosiery Manufacturers Association, has added to his duties the office of southern representative of the Textile Banking Company, of New York City, succeeding his son, Kenneth A. Durham, who has become sales manager for Davenport Hosiery Mills, Chattanooga, Tenn. Taylor R. Durham will maintain his present offices in the First National Bank Building, Charlotte, N. C.

TELESCOPE



TEXTILE BOXES



While safe transportation is of utmost importance in designing all H & D textile shipping boxes, other items, such as convenience in shipping, reduction of storage space, are also taken into consideration. The telescope box is a typical example. It is constructed so that the same box may be used for various size shipments and so reduce packing room labor and expense. Whether you ship to mill, wholesaler or retailer, H & D corrugated boxes, made to carry up to 500 lbs., protect your products, most economically, against all transportation hazards.

Ugull WANT THIS BOOK

THE HINDE & DAUCH PAPER COMPANY
454 DECATUR STREET • • • SANDUSKY, OHIO
Send me your book, "MODERN SHIPPING BOXES"

Name _____
Company _____
Address _____
City _____ State _____

PERSONAL NOTES

about Men You Know

JOHN C. FONVILLE has become associated with the editorial department of COTTON. Mr. Fonville was graduated in textile engineering at Alabama Polytechnic Institute, Auburn, Ala., in 1933, and has subsequently spent several years in practical mill experience, with the Springs Cotton Mills, Lancaster, S. C.

HARRY W. BUTTERWORTH, JR., has been elected president of H. W. Butterworth & Sons Co., Philadelphia, succeeding his uncle, the late ALBERT W. BUTTERWORTH, who passed away on December 18. HARRY W. BUTTERWORTH, SR., was elected chairman of the board. J. EBERT BUTTERWORTH was named executive vice-president and treasurer; HENRY W. BUTTERWORTH and DEHAVEN BUTTERWORTH vice-presidents; and JAMES BUTTERWORTH, 2nd, secretary and treasurer.

W. A. L. SIBLEY has been made general manager of the Ware Shoals (S. C.) Manufacturing Company, succeeding CARL P. THOMPSON, who remains with the organization in an advisory capacity. For the past several years, MR. SIBLEY has been assistant to MR. THOMPSON, and has had active charge of the cotton mill at Ware Shoals, with RAY SWETENBURG as assistant. In his new position, MR. SIBLEY assumes responsibility of all of the plants of the company. Prior to going to Ware Shoals, MR. SIBLEY was for several years superintendent of the Whitney (S. C.) Manufacturing Company. He is a graduate in textiles of Georgia School of Technology, Atlanta. MR. SWETENBURG has been promoted to superintendent of the cotton mill at Ware Shoals succeeding MR. SIBLEY.

W. H. GLENN, who several months ago was succeeded as superintendent of the Whitney (S. C.) Mfg. Co., by GEORGE B. MOORE, has become assistant superintendent at the Locke Cotton Mills Company, Concord, N. C., where C. S. SMART is superintendent. MR. GLENN, who is a textile graduate of Georgia School of Technology, succeeds F. ROBBINS LOWE, who has resigned at Locke to become connected with Saco-Lowell Shops, Charlotte, N. C.

C. A. GRAINGER has been made superintendent of the Anderson (S. C.) Cotton Mills succeeding the late J. R. MANLEY. MR. GRAINGER has been assistant superintendent of the Monaghan plant of the Victor-Monaghan Company, Greenville, S. C.

N. F. GIBSON has resigned his position as instructor in the yarn manufacturing department of the textile school at N. C. State College, Raleigh, N. C., of which he is a graduate, to accept a position in the research department of Rocky Mount (N. C.) Mills.

L. M. SAXON, formerly with the Perkins Hosiery Mills, Columbus, Georgia, has resigned and accepted a position as superintendent of Harding-Towar, Ltd., Los Angeles, California.

E. S. DUNLAP has resigned the position of head dyer at the Waynesboro Knitting Company, Waynesboro, Pa., and has accepted a similar place with the Belle Knitting Corporation, Sayre, Pa.

R. L. SULLIVAN, Newton, N. C., has been appointed general overseer of spinning, spooling, and warping, at Jackson Mill No. 3, High Shoals, N. C.

R. E. HENRY was elected chairman of the National Rayon Weavers' Association. MR. HENRY is president of the Dunean Mills, Greenville, S. C.

F. D. MURDOCK recently resigned the presidency of the Southern Weaving Company, Greenville, S. C.

W. H. TROXLER, Swepsonville, N. C., has been made overseer of spinning at the Carter Mills, Lincolnton, N. C.

CARL C. GRAY has been appointed southeastern district manager for B. F. Sturtevant Company, Boston, Mass., with headquarters at the company's offices, 246 Ivy Street, N. E., Atlanta, Ga. MR. GRAY assumed his duties there on January 15. After studying mechanical engineering at Massachusetts Institute of Technology, MR. GRAY entered the employ of B. F. Sturtevant Company, with whom he has held various positions in the field and at company headquarters for some 20 years. Recently, he has served as headquarters sales manager of two divisions of the company.

DR. EUGENE REYNOLDS MANNING, known throughout the textile industry as a consultant in chemistry and engineering, has joined the research staff of E. F. Houghton & Company. Dr. Manning comes to Houghton Company from Clemson College where he was head of the department of textile chemistry. He has had industrial experience with E. I. DuPont de Nemours Company and National Aniline & Chemical Company. Dr. Manning has prepared a number of reports and technical articles that have applied directly to the textile industry.

WILLIAM LOWNDES, Greenville, S. C., has been elected secretary of the Southern Weaving Company of that city.

F. M. OXNER has resigned his position with the Slater Manufacturing Company to accept the position of overseer of spinning at Oconee Textiles, Inc., Westminster, S. C.

H. O. MCGILL has been made general overseer of spinning at the Avondale Mills, Alexander City, Alabama, to fill the vacancy of G. H. GORDON, resigned.

Obituary

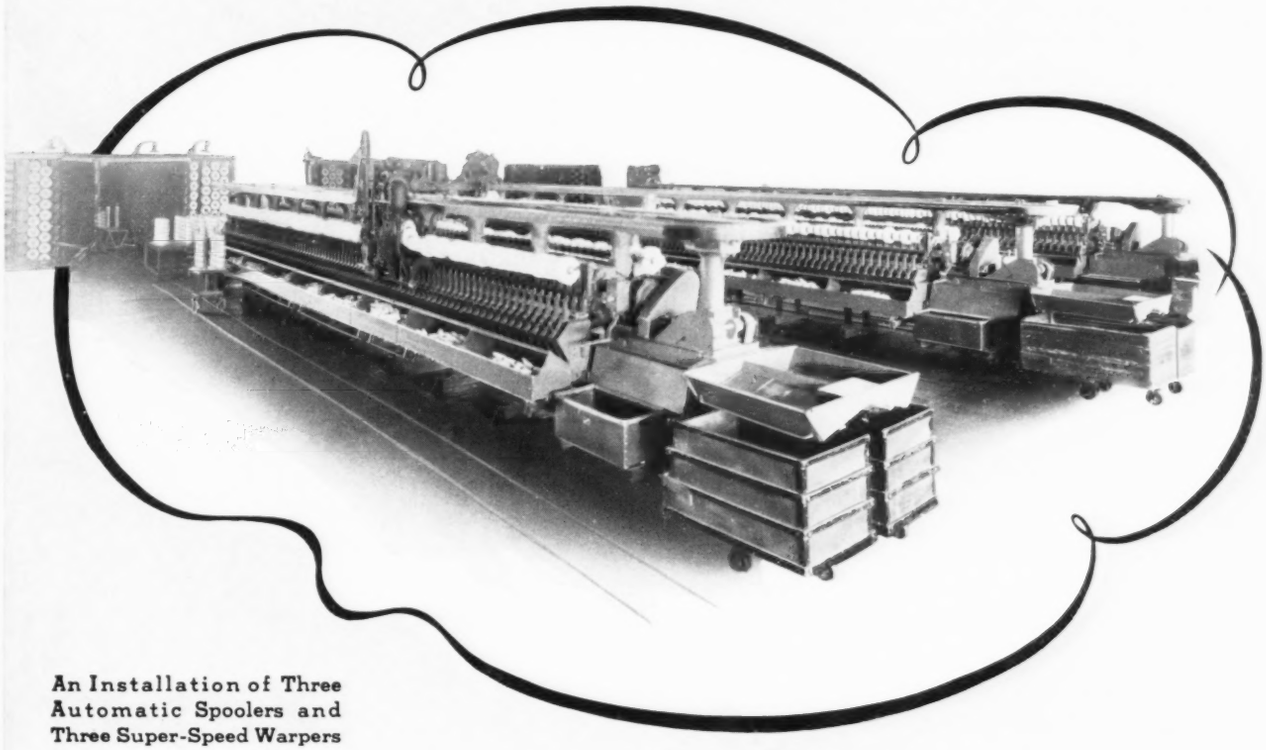
R. E. HIGHTOWER, SR., founder and chairman of the board of the Thomaston Cotton Mills, Peerless Cotton Mills, and Thomaston Bleachery, Thomaston, Ga., and the Aldora Mills, Barnesville, Ga., and Griffin Mills, Griffin, Ga., passed away at his home in Thomaston on Monday, January 13, at the age of 72 years, following an extended illness.

MR. HIGHTOWER, one of the leading figures in the development of southern textile manufacturing, also built the Martha Mills of Thomaston which was subsequently acquired by the B. F. Goodrich Company. He was widely known and loved throughout the industry as a man of sterling character and high ideals, his charm of personality, and the tremendous contribution he made to the establishment and development of southern textile manufacturing. Quiet, unassuming, and possessed of outstanding business acumen and organizing ability, he was one of the true pioneers of this industry.

MR. HIGHTOWER is survived by three sons—the eldest, W. HARRISON HIGHTOWER, who succeeded him as president of the mills several years ago; JULIAN T. HIGHTOWER, vice-president, and R. E. HIGHTOWER, JR., secretary-treasurer, of the mills. Funeral services were conducted on Tuesday, January 14, at the First Methodist Church in Thomaston, with interment in the Thomaston Cemetery.

CONSIDER THESE FACTS...

...WHEN REPLACING YOUR PRESENT SPOOLERS AND WARPERS——



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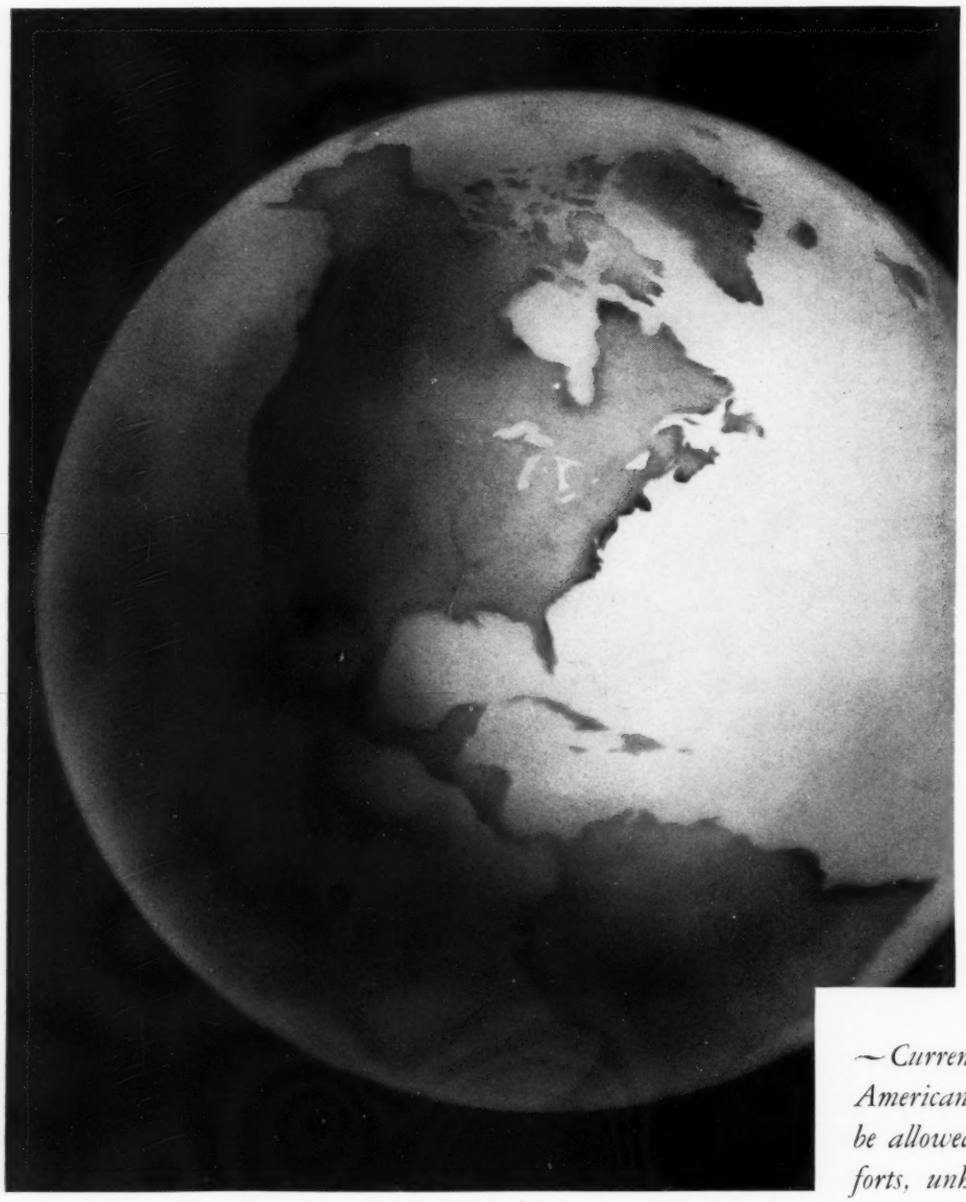

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The American Textile Industry has attained heights of technical superiority unsurpassed elsewhere in the world. It has created its place in the sun, dating from our earliest history as a nation, through the combined efforts of generations of inventive geniuses.

For the past thirty-six years SONOCO, as manufacturers of paper carriers for the industry, has kept pace with the technical accomplishments made by the industry, it being our privilege to have contributed the major improvements in carriers during this period.

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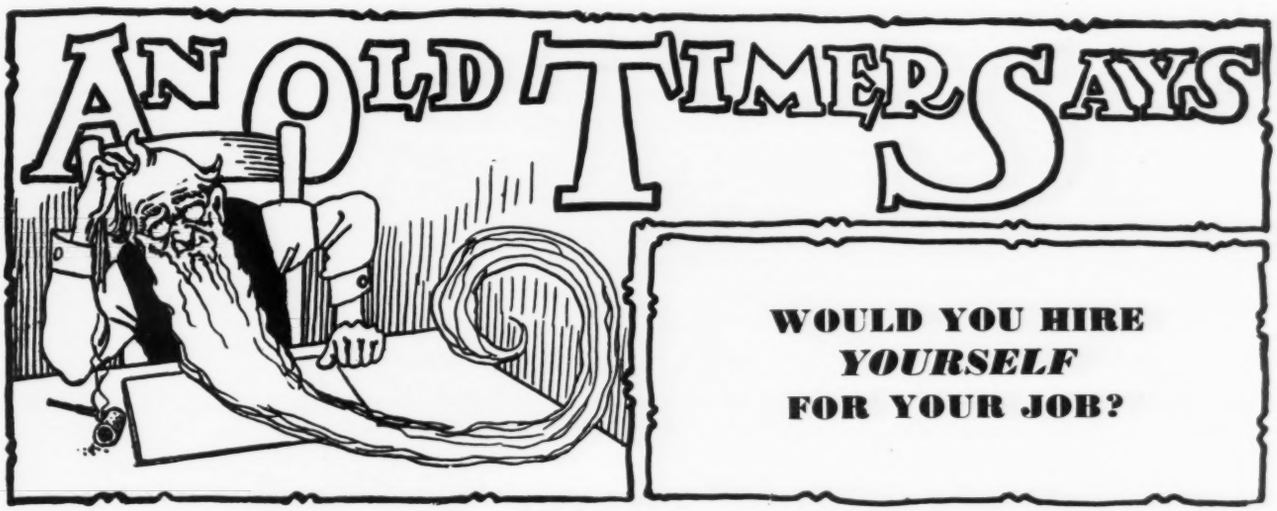

8 Hours a Day---What Does It Mean?

WHAT does eight hours per day mean? That is, for whom is eight hours intended?

Some time ago I attended a civic club meeting in New York and the chief speaker took as his topic "Abolition of the NRA—What Next?" This was just after the NRA had been declared unconstitutional and I attended the meeting more from curiosity than anything else, to see what the general feeling among business men was in regard to the elimination of the NRA.

I was impressed by several of the talks which were made by the heads of different firms. There were men there from Sweden, from England, from Italy, from Russia and from several other foreign countries.

In listening to the general conversation of the men at my table, I was particularly impressed with one phase of the NRA regulations that did not apply to those business men, and that was the eight-hour provision. Among all of the men whom I heard talk, both at the luncheon table and in the speeches that followed, the thought was driven home to me that none of these men had received any personal benefits from the eight-hour provision of the NRA.

Then I began to think about my own work and as to just how much the eight-hour provision of the NRA applied to overseers and superintendents. This brought out this thought: What is the proper definition of the word "work"? There seems to be a general impression that by work a human being secures his leisure. In other words, the ambition of almost every young man is to work for a certain number of years in the hope that he might some time retire and be relieved of work.

On the other hand, a study of the more prominent men in all walks of life will, I believe, bring out the fact that after a man has worked, we will say, as an employee, not meaning especially with a pick and shovel, but for wages, until such time as he is able to accumulate enough money or to become successful in business, thereby enabling him to give some of his time to what we might term creative work—then that part of a man's life *is* the part from which we get practically all of the progress in business, in inventions, in improvements, in machinery, etc.

Real work consists more of solving problems than of any other application you can give work. In other words, when a man gets to where he can allow his mind to concentrate on creative things such as machinery, law or business of any kind, this is the kind of work that is most creative, and if it were confined to an eight-hour limit, progress would be greatly retarded.

We have heard so much of the eight-hour day and the five-day week, have seen so many newspaper articles in regard to what people will do with their leisure time, that we overseers and superintendents have got it partially into our heads that all of this propaganda, so to speak, applies somewhat to us, when in reality it should not and does not. I am afraid that all of the agitation we have seen in regard to shorter hours, increased leisure time, etc., has had a slowing up effect on many overseers and superintendents. The NRA eight-hour provision technically was intended to apply only to employed labor and in no way was it intended to apply to the word work. That is, work as we overseers and superintendents know it.

There is no time limit to work, so far as a man's creative brain is concerned. There is absolutely no limitation on the amount of work of a man's brain except physical energy. There is such a thing as a mind being concentrated on one thing long enough to where the brain will become tired, or where the man will think it is tired, but if he will pick up a novel or a detective story, something that will divert his brain from his concentrated line of thought, he will find that his brain is not tired but is at once alert again following the new thought of the plot that is laid in the novel or the detective story.

A person can lose a job but there is no need in the world for anyone to lose work in the sense that I am trying to describe it. It is simply absurd for a man to fool himself into thinking that he is at work simply because he is employed eight hours a day.

Do you as a reader of the OLD-TIMER page remem-

3583

THE PIONEER SELF-ALIGNING BALL BEARING for NEW AND OLD MACHINES

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THIRTY years ago a textile man wrestled with the problem of making textile machinery more efficient. This was the problem then as it is today: putting new life into old machines and making new machines better. So he invented the SKF Self-Aligning Ball Bearing.

For more than a decade, SKF Bearings have been used to replace inefficient plain bearings, and to modernize textile machinery. Their inherent alignment compensates for shaft deflections due to settling floors, warping frames, and many small parts. And their dependability assures stronger, cleaner yarn... longer life... low maintenance. You can eliminate the cost of taking bearings out by putting SKF Bearings in.

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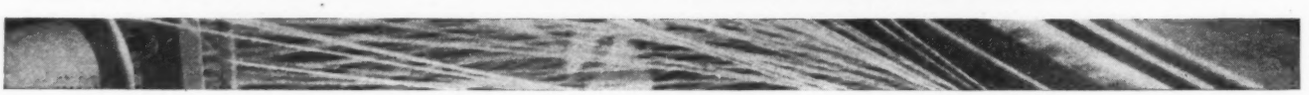
BALL AND ROLLER BEARINGS



ber the article written on Imagination? There are many great men who have claimed that without imagination we would have no progress and others claim that almost anything that the human brain can imagine is possible of accomplishment.

We as overseers and superintendents must guard ourselves against the influence of the shorter hours and shorter weeks which modern times have brought to labor. We are so prone to feel that we too are to participate in the shorter hours.

If you will pardon a personal illustration, I believe I can say that some of my most constructive ideas in regard to the management of a room or the management of a mill have come to me when I was away from my work. I have always kept a light near my bed and a scratch pad and pencil ready to make notes of any thoughts which would come to me before going to sleep or upon awakening next morning and often has been the time that I have awakened at night and made notes of ideas which I hoped to put into effect either the next day or the next month, and as stated above, some of the most constructive ideas have come to me in this way.

The one thought which I am trying to drive home to my brother overseers and superintendents is that the eight-hour day and five-day week are intended for laborers or operatives and do not apply to the word "work" as we overseers and superintendents know our work. We must not let these short hours prevent us from constantly keeping our minds functioning each and every hour of the day, whether we are at play or on duty.

I once read that a great express company was founded by a messenger who worked while he carried packages. He worked as described here, that is, his mind was functioning in a creative way while he was a laborer delivering packages. That's the difference in work and labor.

I read another story telling of a barber who became a millionaire in the oil business because he was willing to study geology when he was not shaving or cutting a customer's hair. Still another story relates how a man became a famous naturalist while his work consisted of a job in a merchant's office. When this man left his labor or job at night he then went to work grinding lenses for microscopes. Through these tiny microscopic windows he was able to see things invisible to the naked eye and in this way discovered some bacteria. This thought was brought out in a recent article by Mr. Ecker, president of the Metropolitan Life Insurance Company, in an editorial in the *American Magazine.*

Let me explain again that this now famous naturalist had a job in a merchant's office; that was his labor, and this was regulated by a certain number of hours per day. That was how he earned his meat and bread but it was not his work. His real work was when he put his mind at work on grinding lenses for microscopes and as a result of that work he became famous.

Many of our best books have been written by men who had jobs to earn a living, doing their writing at night. That represented their creative work. Therefore, men can still work in a creative way whether they have a job or not, and that is what we as overseers and superintendents should keep uppermost in our minds if we expect to be outstanding in our profession.

Keep your mind *at work* after your hours *of labor* have been finished!

Thirty Years a Superintendent

The Story of James A. Bangle

(Continued from page 93.)

been a school teacher. When she saw that the educational opportunities of her faithful boy were gone, she set to work with all her heart. His early book learning was gathered at his mother's knee. Later, to brace himself in the game he had entered he enrolled in the School of the Last Chance, of a correspondence course, and began his long hard study in this University of the Night. The man who was conducting the course was also principal of a textile school in New Bedford and offered to Mr. Bangle as good as he gave anybody. His record proves that he has never been lacking in the technique needed to make his undertakings a success.

Today he gets no greater joy out of anything than helping and encouraging a boy who is studying to master his task. To the scores of night school students he is a great inspiration.

When the boys from his village left in great droves for the World War, he personally saw every one off that he could, corresponded with scores of them and kept track of where everyone went. He mourned with the families of those who fell and greeted those who returned like a brother. He has with great pleasure seen those that returned become efficient fixers, second hands and overseers when they aspired and prepared for such positions.

In a man who completely lost his chances to be a boy by having the role of a man thrust upon him so early in life, one would naturally expect to see some aspects of the boy seep out all along. Mr. Bangle takes his little dog and gun and roves over fields and hills to get a pop at the birds. He relishes every opportunity to go with good company or get by himself, bait a hook and tell afterward what happened. He is as reliable as any other fisherman.

One of the most notable traits in his character is the strength of his friendships. His friends are his friends and a joy to his heart no matter what else may happen.

His life long friendship with George Prior Stone, the Rock of Revolution who antedates Mr. Bangle as superintendent and for whom Mr. Bangle once served as carder and spinner, is such as to incite a strong admiration for both men. It was such friendship as that that caused Dionysius to forgive a man who was condemned to die and yearn for such a friend.

What the friendship and kindness of Mr. Bangle has meant to the thousands of hearts that have come and are gone can never be told. To the thousands who live and think with him he is Mr. Bangle, Proximity in person.

The world moves by human impulses, kindness is the oil that makes it go smooth, friendship is the steel that strengthens and holds it together. Of these two Mr. Bangle has contributed his full share.

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for checking the efficiency of your looms and other machinery.

Make Every Loom-Fixer an Expert

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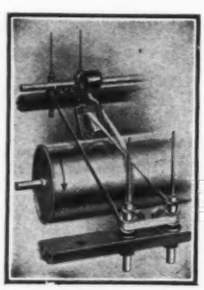

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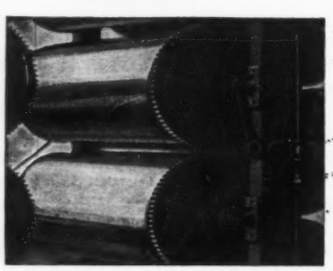

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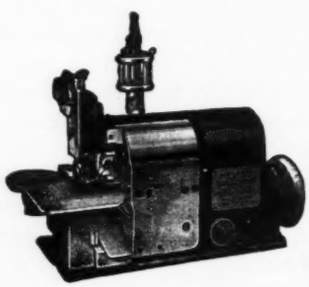

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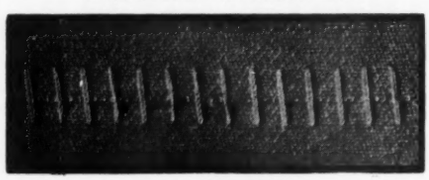

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QUALITY SERVICE

HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all Varieties of Mill Subjects

Week-end Temperatures and Humidities for the Weave Room---and Why

A Mill Man's Comment

EDITOR COTTON:

I will try to discuss the question of "CONTRIBUTOR No. 6436," who raised in the January issue, page 89, the question of "What is the best temperature and relative humidity to try to maintain in the weave room over the week-end during the winter months"? He pointed out that if the weave room is kept too warm without enough humidity, the filling sloughs off and the warps become brittle, and if it is too cool, the weaving will not start up well.

We hold our weave rooms in the winter from stopping time on Friday night until Sunday midnight at 75 degrees F. Then we set the temperature up to 80 degrees gradually so that by starting time Monday morning all of our rooms have this temperature.

We find that filling which has been through our filling conditioner and then allowed to dry out, if left in the batteries at stopping time on Friday night, sloughs worse on Monday morning than filling that has not been conditioned at all. We therefore allow our batteries to run as low as possible on Friday night so as to have only a few bobbins of old filling in them at starting time Monday morning.

At 7 P. M. on Sunday night we start our humidifiers and hold the humidity at 75 degrees until 6 A. M. Monday morning, and at this time we set our relative humidity up to the amount we wish to carry in each weave room. On our particular weave this runs from around 83 to 88 per cent.

CONTRIBUTOR No. 6446

An Engineer's View

EDITOR COTTON:

In deciding what temperature and relative humidity it is best to try to maintain in a cotton weave room over the week-end during winter months, consideration should be given to the effects on the material in process, the effects on the machinery in the room, and the question of expense.

With respect to the material itself, the ideal temperature and relative humidity condition is that which will retain in or give to the material a temperature and moisture regain most suitable for processing on Monday morning after the mill machinery has been started.

In most cases and for at least several hours preceding the Monday starting time, this calls for a room temperature of the same or only a few degrees less than that maintained during working hours, and a relative humidity of the same or only a few per cent less than during working hours.

With respect to mill machinery, it is necessary to bear in mind that condensation of moisture on machine surfaces is always objectionable. Consequently surface temperatures should be maintained at all times above the dew-point temperature of the room, which means within 10 degrees of the air temperature if the relative humidity is 70 per cent or within 6 degrees if the relative humidity is 80 per cent. If the temperature of the machinery drops considerably below normal during a shut-down period, heating and humidifying of the room air should be sufficiently gradual on starting up to prevent excessive lag in the temperature of the machine surfaces and condensation of moisture. This precaution is more important in some other departments, such as card rooms, than in weave rooms.

To reduce machine friction and power required, a room temperature of at least 70 degrees is desirable at the time of starting.

Many successful mills operate humidifying systems on a 24-hour basis and over week-end periods during summer and winter, and the heating system during the winter. With good heating and humidifying systems under reliable automatic control, such continuous operation is entirely safe and the advantages are believed by many to outweigh the slight extra expense involved for fuel, power and supervision. Undoubtedly this is the ideal practice.

On the other hand, many mill officials believe that humidification may be dispensed with during week-end periods. When humidifiers are shut off, artificial heat also may be dispensed with, except a moderate amount during very cold weather.

Operating an adequate heating system at normal capacity without automatic control is a wasteful practice. In mild weather room temperature becomes excessive; fuel is wasted, and if humidification is suspended, excessive drying of material results. During working hours comfortable working conditions have obvious advantages. Temperature control certainly is a wise investment.

Some temperature control systems provide for lowering the temperature automatically 5 degrees, 10 degrees or more during shut-down periods. Attempts to economize by this method or by shutting off heat entirely during week-end periods have not proven entirely successful, especially during extreme weather or whenever heating capacity is insufficient to

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You can learn why Schieren Belts are *always* your *best* investment for power transmission if you will send for a copy of our recently published "Schieren-izing" booklet. It is yours for the asking. Just drop us a line to our New York Office or to our Dixie Tanneries at Bristol, Tennessee.

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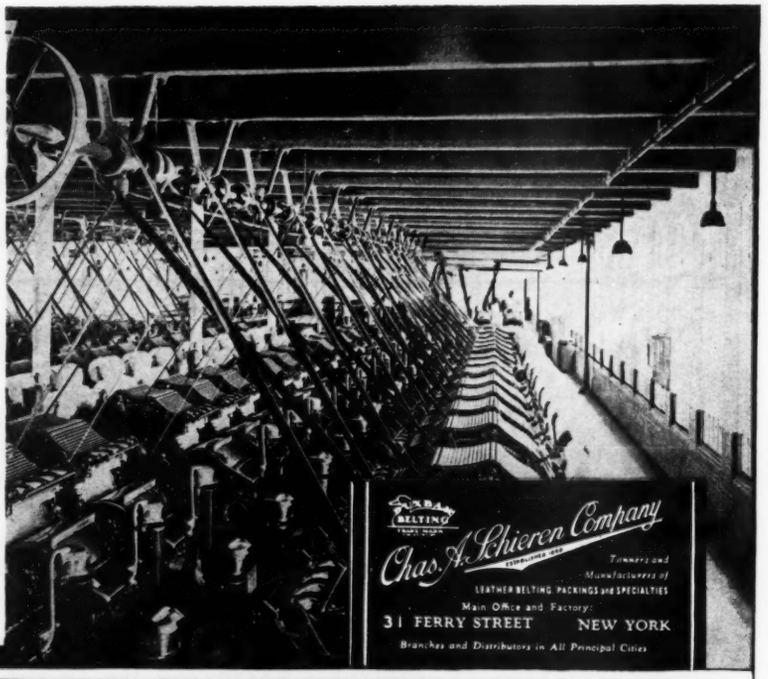
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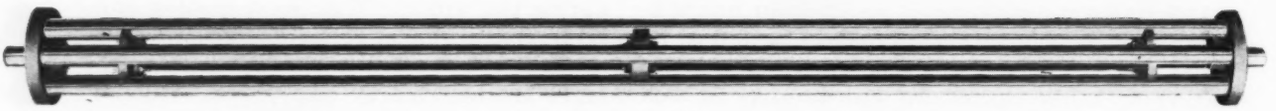

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The Eagle Penetration Roll takes the place of the usual plain immersion roll. It permits the size to boil all through the yarn and a specially designed blade causes the size to flow outward from the center of the roll, hastening penetration considerably. Careful tests have proved that this roll is highly advantageous in eliminating hard size or lumps in sizing and that the retention of size carried through to the cloth room saves cotton by enabling the mill to run at least a 1% lighter warp yarn with the customary filling numbers and maintain correct cloth weight.

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The Eagle Penetration Roll will save its cost on every 100,000 pounds of warp slashed, besides improving your weaving.

Full information and prices will be sent gladly on request. Write today to Eagle Iron Works, Greenville, S. C.

EAGLE PENETRATION ROLL

bring room temperature up quickly on Monday morning when outdoor temperature is lowest and heat from motors, light and operatives is absent.

In cases where humidification and heating of the weave room during week-end periods is dispensed with or where a lower temperature or humidity is maintained during week-end periods, certain rules relative to starting up the systems Monday morning may be considered essential.

Ample time should be given for bringing the room conditions up to normal well in advance of the time schedule for starting the mill machinery. Many mills overlook the importance of this. For proper conditioning of material, heat and humidifiers should be turned on at least four hours previous to starting the looms in order to insure as nearly as possible normal moisture regain in the yarn, normal harness tension, shuttle friction, etc., for early morning operation.

Tests have shown that where humidifiers are started at or only shortly before mill starting time, loom stops are greater for the first few hours in the morning than thereafter, whereas by starting humidifiers four or more hours in advance of the looms, the work runs consistently well all day.

While there is little danger in a weave room of serious trouble from condensation of moisture on cold machinery, satisfactory performance of the humidifiers and automatic regulators and maintenance of uniform regain in the material in process require that room temperature be moderate and reasonably steady whenever humidifiers are in operation.

Humidifiers should be of a type which will operate satisfactorily with little or no supervision under the conditions likely to prevail.

During shut-down periods in cold weather it is best not to operate the heating system without the humidifying system or vice-versa. In other words, both should be operated simultaneously or both should be shut off. To maintain room temperature without humidification invites excessive drying of the material in process. To attempt to humidify without heating is dangerous from the control standpoint and may cause wetting in the absence of moving belts, moving machine parts and warm machine surfaces.

Automatic humidity regulators should be dependable and sensitive and should not be erratic in the presence of fluctuating temperatures, nor sluggish in response to the rapid changes which occur after a shut-down period. We have found that the psychrometric wet and dry bulb regulator maintains a fixed regain condition regardless of room temperature, and may be used satisfactorily in the absence of temperature control, which makes it particularly useful in controlling humidification after a week-end or over-night shut down period. With this instrument, the humidity setting may be readily changed for overnight and week-end operation in cases where this is found desirable.

The foregoing discussion of regulation may seem foreign to the subject under consideration, but in reality it has an important bearing. The characteristics and reliability of the humidifying and control equipment and to some extent also the heating system during and immediately subsequent to a shut-down period, affects to no small degree the atmospheric conditions which can be maintained to best advantage while the mill machinery is idle.

To summarize:

(1) The best week-end conditions for weave rooms in winter are believed to be the same or within 5 degrees to 10 degrees F of the best temperature during working hours, 75 degrees, and the same or within 5 to 10 per cent of the normal relative humidity, 75 per cent to 85 per cent. Automatic control of both temperature and humidity are essential to proper operation of the heating and humidifying systems.

(2) Heating and humidification may be shut off and temperature and humidity may be allowed to fall to normal levels provided conditions are brought back to normal well in advance of mill starting time, preferably at least four hours in advance.

(3) Adequate heating with automatic control, good humidifiers and reliable humidity regulation are all advantageous and by their use the economies of suspending heating and humidification during week-end periods may be realized without experiencing erratic performance and poor production on Monday mornings.

R. H. BROWN (MASS.)

How Can I Get a Positive Let-Off On These Looms?

Any readers who have made this type of goods are invited to give any information of interest on this problem . . . . . .

EDITOR COTTON:

In our weave room we have 35 72-inch C. & K. looms; 14 of these are 20-harness dobbies and the rest are Jacquards. All of the dobbies have four boxes and the Jacquards have two boxes.

We are making a piece of upholstery goods that is so constructed that the tension on the warp beam must be the same all of the time, otherwise we will have imperfect goods woven. Whenever a change is made in the tension on the warp by the weaver or loom fixer, this causes the color and general appearance of the goods to be changed so that it is absolutely necessary to try to hold the tension on this bottom beam the same at all times.

The tension on the beams now is regulated by a lever on which weights are placed that applies the tension to the beam through a friction band around the head of the beam. It is so easy to change the tension on the beam on these looms and so hard to regulate it properly on both ends of the beam, that we have tried to find some means of obtaining and holding the positive even tension on the warp which will enable us to regulate this tension by some screw device which can be set and held at different degrees of tension.

If any of your readers can give us any information on this problem, as to a means of securing a positive let-off for the bottom beam on these looms, I shall very much appreciate it.

CONTRIBUTOR NO. 6437

Moberg Discusses Article on Double- and Triple-Width Fabrics

We tried to make it plain in an editorial note published along with the article in November referred to by Mr. Moberg, that it was presented from the standpoint of *novelty* and presented the comment of a practical man indicating some of the problems brought up here by Mr. Moberg. . . . However, since there may be other readers who did not clearly understand the purpose of the article, we are pleased to present this comment from Mr. Moberg citing those points, which according to his experience, make the weaving of multiple-width fabrics impracticable in a general way.—The Editor.

EDITOR COTTON:

On page 52 of your November issue appeared an article on weaving multiple-width fabrics, by Howard Price Galloway.

This article, while theoretically correct, might convey to the readers of COTTON that it is practical to weave fabrics in this manner. It is not a novelty to weave multiple-width fabrics in a narrow loom for it is probably as old as weaving on power looms. Now and then, mills try this manner of weaving when orders come in for a fabric wider than the looms available, but there are so many drawbacks in weaving multiple-width fabrics in a narrow loom that it is, practically, a failure. Also, so many mills today have wide looms with which it would be almost impossible to compete that weaving multiple-width fabrics on a narrow loom would be out of the question on ordinary fabrics.

Let us suppose that there are two mills, *A* and *B*, which both get an order on say 90-inch 64x64 sheeting. Mill *A* has 92-inch automatic looms while Mill *B* has 32-inch automatic looms. The 92-inch looms, according to the Draper chart, run 100 p.p.m., and the 32-inch looms run 185 p.p.m.

In the 92-inch looms the sheeting is run single width, giving a sley of 64 while in the 32-inch looms it is run triple width with a sley of 192. The 92-inch looms are inserting 64 picks per inch while the 32-inch looms are inserting 192 picks per inch.

It is obvious that there will be an abnormal crowding of the warp threads in the 32-inch looms running on triple width. The chafing and strain on the warp threads will be much greater than in the 92-inch looms. Also, the high pick, 192, increases the chafing of the warp threads considerably. The 192 picks per inch means that there are 192 abrasions from the harnesses and reed before a given point on the warp threads has been woven into cloth while on the 92-inch looms there are but 64 abrasions in the same length.

Figuring out the production of the 92-inch and the 32-inch looms, and using the following data:

Mill A.	*Mill B.*
Loom Speed, 100 P.P.M.	Loom speed, 185 P.P.M.
Loom width, 92-inch	Loom width, 32-inch
Efficiency, 90 per cent	Efficiency, 80 per cent
Picks per inch, 64	Picks per inch, 192
Weekly run, 40 hours.	Weekly run, 40 hours.

We have for Mill *A*

$$\frac{100 \times 60 \times 40 \times .90}{64 \times 36} = 93.5 \text{ yards per loom}$$

and for Mill *B*

$$\frac{185 \times 60 \times 40 \times .80}{192 \times 36} = 50.8 \text{ yards per loom}$$

This shows that Mill *A* is producing 84 per cent more cloth per loom than Mill *B*.

It will be noticed that the efficiency of the 92-inch looms is 90 per cent, while that of the 32-inch looms is but 80 per cent. This is assumed to be the result of the heavy crowding of the warp threads, the high number of picks per inch, the high speed of the loom and the interference to the weaver by a number of combined circumstances. Actually, the difference in efficiency would probably prove to be still greater. The number of looms per fixer and weaver would be about the same whether they are 92-inch or 32-inch. The reason for this is that the 92-inch looms, running slower, will not have so many break downs, nor so many warp breaks as the fast-running 32-inch looms.

Then, it must be taken into consideration that in weaving multiple width fabrics for a narrow loom the second and third layers of the fabric are hidden from view and any defects occurring in these portions cannot readily be detected before the cloth is opened out and then it is too late to do anything about it. If there should be mispicks or skips in the fabric the layers would be stitched together and would have to be cut apart, leaving a very bad place in the fabric. If a heddle should break in the central portion of the fabric it could not be seen before the warp end drawn in on the broken heddle would be slack enough to let the drop wire down sufficiently to stop the loom. This may not take place before several yards of goods are woven. If a heddle broke on the bottom portion of the fabric it could not readily be seen before the cloth is down on the cloth roll, at the earliest, and with 192 picks per inch this would be a rather long pick-out. If an automatic loom is used in weaving a triple-width fabric there would be holes in the fabric where the filling has been replenished in the fold of the fabric. The fabric woven on a multiple-width system also will show a very heavy crowding of the warp threads in the fold and form a heavy place running the entire length of the cloth. It will also have a very bad crease where the fold has been. The two last mentioned defects are almost impossible to eliminate and result in an inferior fabric which would be acceptable only in very few cases.

It is because of the many drawbacks that weaving multiple-width fabrics has never been very popular. Even weavings of tubings, such as are used for pillow cases and bags, is not considered relatively practical. Manufacturers now more and more favor making the cloth in single width and sewing it together on sewing machines. It is claimed that this method is both cheaper and more practical.

Mechanically, the weaving of multiple width fabric is rather expensive as it increases the number of harnesses required for a certain fabric by three and any

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other weave than plain would be placed outside the capacity of an under-cam loom, making it a side-cam, dobby, head-motion or Jacquard proposition. If the fabric, for instance, was a two and two twill, which in single width would require but four harnesses, the triple width would require 12 harnesses. The cost of equipping, starting up and maintaining, say 100 looms, with 12 harnesses instead of four, would be considerable and a manufacturer with wide looms weaving single width would have little or no trouble to compete with such a proposition.

IVAR MOBERG

Answers to Questions on Spinning Print Cloth Numbers

EDITOR COTTON:

I am replying to the questions on print cloth spinning from "CONTRIBUTOR No. 6440", on page 89 of the January issue.

He first asked for the most common causes of ropy filling. The most common causes for sloughed or ropy filling are improperly built bobbins and the reasons are listed here, according to my experience: (1) Worn pitman rolls and cams; (2) ring rail too slow; (3) stroke too long at the beginning of the doff; and (4) travelers too light. Any of these four causes will give plenty of trouble for the weaver.

I recommend a ball bearing pitman roll, and changing cams where worn. I also suggest that the ring rail speed be checked to see that it travels down fast and up slowly. This tends to bind the filling on the bobbin and prevent it from sloughing off. (This answers this man's second question as to whether the ring rail should go up fast or up slow.) To prove the statement I have just made, simply take two bobbins, one from a frame on which the rail has traveled up slow and the other from a frame on which it traveled up fast, knock the filling off, and take it by each end and pull apart. I think it can be very easily determined which method to use.

This man indicates that he is on print cloth numbers, which is the range I am running. I think the ring rail should have a speed of 6½ inches per minute on the upward stroke and 19½ inches per minute on the downward stroke. This can be accomplished by changing the worm from single to double or triple as the case might require.

The speed of the ring rail can be easily determined. Let us assume that the stroke is 1⅝-inch, and that the time required to travel up is 15 seconds, and the time required to travel down is 5 seconds. Then,

$$\frac{1\frac{5}{8}'' \times 60 \text{ (seconds per minute)}}{16 \text{ seconds}} = 6\frac{1}{2} \text{ in. per min. on up stroke}$$

$$\frac{1\frac{5}{8}'' \times 60 \text{ (seconds per minute)}}{5 \text{ seconds}} = 19\frac{1}{2} \text{ in. per min. on down stroke}$$

The travelers should be checked carefully to determine that they are of the right weight. I have heavied my travelers from one to four numbers and found that this helps me in preventing sloughed-off filling.

This man wanted to know what is considered to be the life of travelers to get good running work. I consider that good travelers should run about 320 hours on 40s to 45s filling at about 3,400 feet per minute. The speed in feet per minute of course will affect the life of the travelers. For warp, with a speed of 5,200 feet per minute, I think 160 hours would be about the limit for good running work and for the protection of the ring.

The next question this man asks is whether or not 31.25 ends down per 1,000 spindles per hour on 30s yarn with a front roll speed of 104 r.p.m. (yarn made from 1-inch Strict Low Middling cotton) would be considered good, fair or bad.

I would say that is fair running spinning. I think that for so low a front roll speed, it should be down to 25 ends down per 1,000 spindles per hour. My experience with 1-inch cotton, 31s warp, 140 r.p.m. front roll, is from 30 to 35 ends down per 1,000 spindles. I consider this only fair running work and under certain conditions this end breakage could be reduced to some extent.

I am always glad to exchange ideas with our fellow mill men and hope these few lines may be of some help to your inquirer.

F. J. T. (S. C.)

Gives Settings for Sliver Lap, Ribbon Lap and Comber

EDITOR COTTON:

I will try to answer the question of "CONTRIBUTOR No. 6393", on page 84 of your July issue, with reference to the best roller settings, etc., for sliver lap and ribbon lap machines, making a 56-grain comber sliver, with 15 per cent noils, out of a card sliver of 44 grains per yard, using 1 1/8-inch and 1 1/16-inch cotton.

Sliver lap machine. On this machine I would recommend that the roller setting from the center of the first to the center of the second be 2 inches and, second to third rollers, 2½ inches.

With a 44-grain card sliver and 20 ends up on a Whitin sliver lap machine with the gearing the same as in the Whitin catalog, I would recommend that he change the back roll gear so as to be able to make a 600-grain lap, which I think is the best weight to be used and which would give a draft of about 1.75 to 1.85 in this machine, which makes a good draft for it. If he should happen to have one of the newer machines which doubles 24 to 28 ends, he might not have to change the back roll gear, but I would recommend the same weight of lap.

Ribbon lap machine. On this machine, using a 600-grain sliver lap, I would set the rolls from the center of the first to the center of the second, 1 7/16-inch; and from the second to the third, 1 9/16-inch; and from the third to the fourth, 1 11/16-inch. This weight of lap would give a good draft on the ribbon lap machine whether it is a four or six-head machine, and I would make a 600-grain ribbon lap for the comber.

Comber. I take it that he has a D-3 Whitin comber taking out 15 per cent waste. If he used a heavier lap than 600-grain he would not get as good combing. I don't say that a heavier lap could not be used be-

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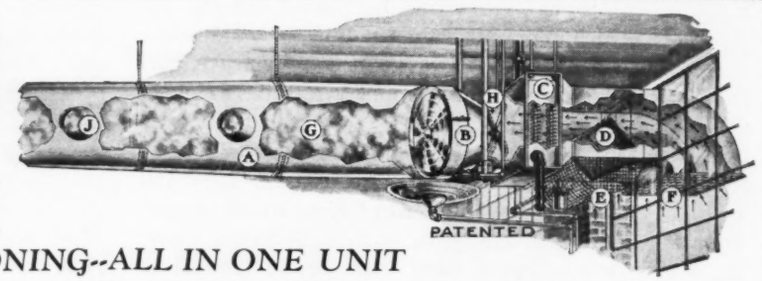

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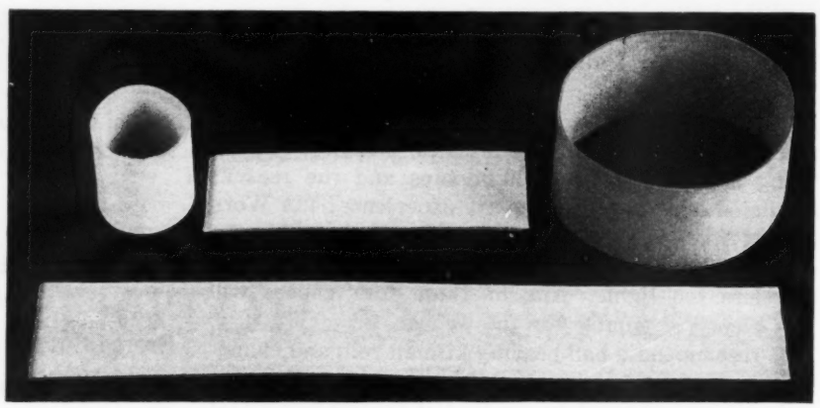

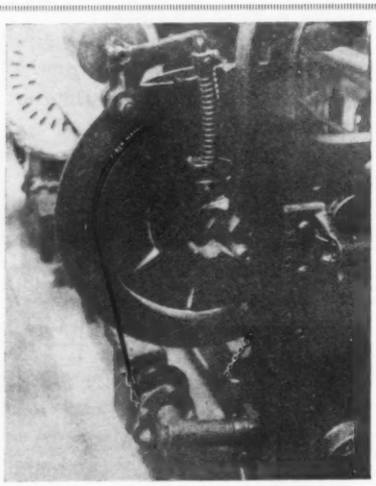

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cause it can, but he would not get as good combing and I would use a feed of about 4 teeth. A heavier feed would be too much for the half lap and a lighter feed would not give the production he should get and besides it would make too short a draft in the draw box. I would recommend as roller settings on a 5-roll draw box from the center of the first to the center of the second rolls, 1 7/16-inch; second to third, 1 9/16-inch; third to fourth, 1 11/16-inch; and fourth to fifth, 1 13/16-inch.

I trust this information will be of some help to "CONTRIBUTOR No. 6393".

H. J. B. (CONN.)

Some Things I Didn't Learn at Textile School—By "Wash"

Of course, we hope any reader so inclined will submit his answers to these questions . . . .

EDITOR COTTON:

Well, I see on page 153 of the April issue of COTTON that "R. E. C. (CONN.)" states, in commenting on some of my questions, "Does he (meaning 'WASH') not think that such things are taught, discussed, and even tried out at the school?"

I am also a textile graduate, but here are some of the things you do not learn in all textile schools:

1. On a fly frame, the carriage is making its downward traverse, and it comes into contact with a part of the casing or bobbin, thus blocking it—what would you do in such a case? On the English builder? On the American builder?

2. By actual test on a slubber, the total diameters of the cones were found to be 10.38 inches at the start of the set; 10.43 inches in the middle; and 10.4 inches at the finish. What was the cause?

3. Why do the cone outlines differ in the bobbin lead and flyer lead systems?

4. Why are the cone outlines suitable for the Houldsworth compound and not suitable for all new differential motions?

5. Why is the hyperbola curve greatest at the beginning of a set of roving?

6. Why do we find a difference in speed between the spindle and bobbin on all differentials?

7. Can you name a cone-driven fly frame?

8. Is it possible to obtain the increment of the bobbin increase with a disc on fly frames in the cotton industry?

9. What is the percentage of cone belt slippage at the start of the set, also the percentage at the end of the set? Is the bobbin lead system to blame for the vagaries found in the action of the cone belt?

10. Why are the layers per inch closer together on the outside of a full bobbin than they are on an empty bobbin on a Woonsocket fly frame?

11. On the English builder, when the rocker jaw and latches are very smooth and slip just before the proper change of the carriage—what should you do?

12. On a drawing frame, the front top leather roll is making 400 r. p. m. and jumps. What is the cure?

13. On the English builder equipped with

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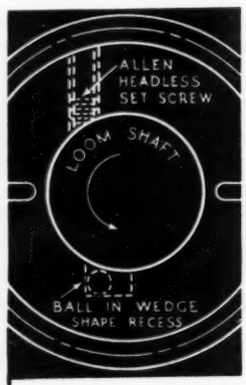

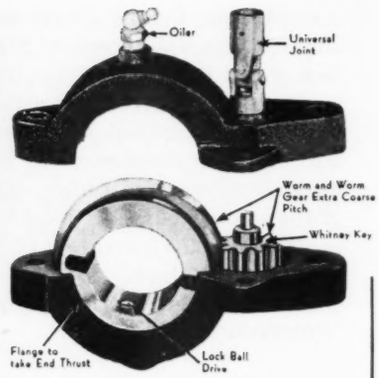

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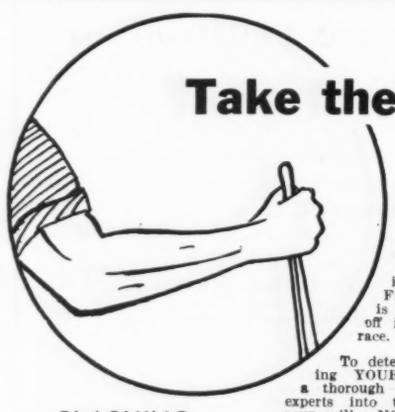

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weights for changing the traverse, what will cause the bobbin to have a taper of 45 on one end and only 27 on the other?

14. On a drawing frame, the calender change pinion is from 30 to 34 teeth. The webs are sagging slightly, but you find that the change of one tooth will stretch the webs. What would you do in such a case?

15. On a drawing frame running an 80-grain sliver, with common rolls, what amount of draft is necessary between the drawing and calender rolls?

WASH (R. I.)

A Little Of This and That

Reviewing some of the recent discussions of carding subjects in this department, by a contributor who is never quite able to catch up with his reading

EDITOR COTTON:

As you know, I come to life every now and then. Well, I have been reading again and would like to make a few comments on what I have read. Going back to page 73 of your August 1934 issue, I find that "CONTRIBUTOR NO. 6123" discusses the card room of a friend of his which he had recently visited, and in his second paragraph he mentions ends running tight on the fly frame from the steel roller to the flyer, and asks how these ends could have been made to run slack. My first move would have been to change the cone gear until the slack tension was correct. He also asks which department suffered most. I would say that both the carding and spinning departments suffered because of uneven work, which would show up more in the spinning sizings.

This man then told of noticing some frames where the casing on the carriage and spindle gears was wood and he noticed that several bobbin gears were jumping. I have run frames with wooden casings and found that the brackets holding the casings were the cause of binding; when these brackets are set correctly there is some play in the casings.

Your contributor reported that his friend was running 1 1/16-inch cotton and that he set the rolls on his fly frames, front to second, 1 5/16-inch, and that the stand holding the middle second and back roll was made in one piece, with a fixed setting of 1½-inch. He asked for the proper setting on these rolls. I would say that the roll settings given were wrong; on fly frames I have always secured the best results by setting the front and middle rolls 1/16-inch over the staple. It would not be much work to split the fixed setting, making two, and putting another set screw in for the purpose of holding firmly.

This man said he raised the clearer cover and saw that the top rolls had a concave base on each roller where it looked as if the roving traverse guide was not making its full stroke, or had been running in one place continuously. The overseer explained that his frames were equipped with an old type roving traverse guide that would only give a certain stroke with no alterations in the succeeding strokes.

I believe the greatest trouble with the roving traverse rods was no freedom of motion. I should have taken them apart and cleaned them thoroughly and then re-set them.

This man also brought up the question of hard ends on fly frames, which I think are caused mostly by too much twist or very short drafts. Hard twist would not cause pulling over the ends, sometimes vibration causes the bobbins to move more freely and they will overrun the feed to the back roll.

I went to a mill as overseer once where a condition similar to the one described existed. There were speeders of different lengths with the same price per hank being paid. I first did some figuring and then presented the situation to the superintendent with my explanation and he being a man given to thought saw the justice and new prices per hank were arranged for different lengths of frames.

Your writer also brings up the matter of increasing production by reducing spindle speed. I have known of many cases where this was done. With high spindle speeds there are more end breakages and this leads to putting in more twist, and each time more twist is put in, production decreases, although less ends come down. By reducing spindle speed, twist can be taken out to standard or good running conditions. Assuming there are during the worst running conditions 15 ends down per hour, this will mean at least 15 minutes lost every hour on each spindle of the frame. If by reducing spindle speed the ends down are reduced one-half, there has been a gain of 7½ minutes which in itself would not offset the reduction in speed, but when we remember that by taking out twist the front roll is running at least at the same speed as before, we can see how increased production is obtained. It would not be necessary to change gearing; the best method would be changing either the driver or driven pulley.

Then, under "THE SCAVENGER ROLL" on page 45 of the September 1934 issue, you had a very thoughtful comment with reference to the discussion meetings of mill men. It was pointed out that, "We do not give enough attention to technical research in these organizations. The opinions expressed are rarely backed by figures and no doubt are often what some of us believe rather than know."

I have attended many of these meetings and have heard men give their ideas on various subjects but when they were questioned thoroughly it was found they had not tried the ideas to which they were giving expression. I fully agree that much more research work should be done; if we cannot convince others that they should work with us, that is no reason why we cannot go ahead and try out our own ideas, but even then they will be largely wasted unless minute detailed data are kept, thoroughly analyzed and the tests tried again to see if the same results are obtained. I enjoy reading your reports of these divisional meetings, and there is a natural enjoyment from finding men making a statement and then not being able to stand back of it. It is too bad that some men try something out and become satisfied in their own minds that it is a good thing and then are afraid if they say anything about it that somebody else will receive the credit. I think that by talking these

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25. "Lupogum" and "Monopole Oil"—Two booklets on textile sizing and finishing products. Jacques Wolf & Company, Passaic, N. J.

28. Akron Belting—Practical rules and general information for users of belting with belting catalog. By Akron Belting Co., Akron, Ohio.

29. Continuous Card Stripper—A 20 page booklet describing in detail continuous card strippers, their advantages, the power required to operate, etc. Saco-Lowell Shops, 147 Milk St., Boston, Mass.

30. Lubrication of Textile Machinery—32 pages, illustrated. Data covering the economical lubrication of all textile machines. New York & New Jersey Lubricant Co., 292 Madison Ave., New York, N. Y.

38. Sleaziness in Full Fashioned Knitting—Illustrated survey with samples of fabric showing causes of sleaziness and methods to be employed in eliminating it.—By Textile Machine Works, Reading, Pa. (This company also issues parts catalog for Reading full fashioned machines with general information on subject of full fashioned knitting.)

55. Interpretation of Analysis for the Layman—An eight page booklet explaining what the various items used in fatty oil and sulfonated oil analysis mean, enabling the ordinary textile man without chemical education to interpret the various chemical analyses. National Oil Products Co., Harrison, N. J.

62. Rubber Products for the Textile Industry—A 40 page booklet giving a wealth of information on the proper selection, installation and operation of rubber belts, together with charts, showing horsepower rating, pulley sizes, V-belt sizes, also information on all types of hose and rubber covered rolls used in the textile industry. Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J.

64. Efficiency and Performance of SKF Roller Bearing Spindles—A twelve page booklet showing the advantages in power consumption, increased production, savings in lubrication, increased yarn breakage strength to be secured through roller bearing spindles. SKF Industries, Inc., Front St. and Erie Ave., Philadelphia, Pa.

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66. Dronsfield's Patent Portable Auto-Feed Needle Point Grinder No. 176—describing a new departure in card grinding—John Hetherington & Sons, Inc., 250 Devonshire St., Boston, Mass.

69. Monel Metal Equipment for the Textile Industry—A 50 page buyers' guide and catalog with more than 100 illustrations of various items of monel metal dyehouse equipment. International Nickel Company, Inc., 67 Wall St., New York, N. Y.

72. The Merrow Butted Seam—A 16-page booklet defining and illustrating the Butted seam, describing its properties and outlining some of the advantages to be gained by its use in textile fabrics. The Merrow Machine Co., Hartford, Conn.

70. Fafnir Ball Bearings for One Process Pickers—outlining the advantages of ball bearings in guaranteeing smooth, accurate motion, particularly on eveners, as well as uninterrupted production, ease of operation and cleanliness of bearings units throughout the one-process pickers. Fafnir Bearing Company, New Britain, Conn.

77. Bulletin S 200—Illustrating and describing the new Reeves Variable Speed Drive for spinning and twister frames, explaining its many distinct advantages and giving charted results of exacting tests. Reeves Pelley Company, Columbus, Indiana.

88. Dayton Cog Belt Catalog—A 32 page booklet full of vital information on power drives, plainly and simply assembled and arranged so that anyone can select the proper standard drive for any condition. It also provides data for the calculation of drives where acquired. The Dayton Rubber Mfg. Co., Dept. C-11, Dayton, Ohio.

92. Silicates of Soda—A review of the properties of silicates of soda and their various uses. Philadelphia Quartz Co., 121 S. Third St., Philadelphia, Pa.

93. Metso—Describing this industrial cleanser which has wide use in industrial cleaning of metals, floors, etc., and is used in kier boiling, silk and rayon degumming. Philadelphia Quartz Co., 121 S. Third St., Philadelphia, Pa.

94. New Development by Onyx—Eight page booklet describing and giving uses of new developments in sulphonated aliphatic compounds . . . called Aliphatic Ester Sulphate and Glyceryl Sulphates. Onyx Oil & Chemical Co., 15 Exchange Place, Jersey City, N. J.

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107. Complete Information on Alemite Lubrication. Showing how costs can be reduced through proper lubrication. Alemite Corp., 1828 Diversey Blvd., Chicago, Ill.

109. Some Properties of Starch and Dextrine—Explaining certain fundamental properties of starch and its derivatives and their action when heated and agitated. Stein, Hall & Co., Inc., 285 Madison Ave., New York City, N. Y.

110. 3-In-One Oil for Industrial Uses—showing the many industrial uses and advantages of this oil. Three-In-One Oil Co., 70 Varick St., New York, N. Y.

116. Arcy—Telling in an interesting way the story of Arcy, which completely liquefies ordinary thick boiling pearl starch, and its many advantages. Drake Corporation, Norfolk, Va.

117. Anti-Friction Bearings as Applied to Spinning, Drawing and Twisting Frames—This bulletin shows with detailed drawings how a simplified design of roller bearing applications is made to replace the plain babbitt bearings and lists the advantages that are gained. It deals primarily with better continuous production and in consequence freedom from equipment care and repairs. Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.

119. The World's Finest Sewing Machines—a condensed catalog giving details of the various Willcox & Gibbs sewing machines. Willcox & Gibbs Sewing Machine Co., 658 Broadway, New York, N. Y.

120. Goodyear Mechanical Rubber Goods Catalog—40 page catalog giving practical information and tables helpful in the selection of the proper belting, hose or packing to suit the requirements of the mill. Goodyear Tire & Rubber Co., Akron, Ohio.

121. Engineered Packages for the Textile, Dry-Goods and Apparel Industries—Showing the savings to be made through the use of properly engineered packages of corrugated fibre in the shipping of yarn, woven and knitted products. Hinde & Dauch Paper Co., Sandusky, Ohio.

122. Water Filters and Filtration Equipment—Containing complete description of the chemical processes involved in the coagulation and precipitation of foreign matter, the removal of iron, oil, manganese, from water and the production of clean water suitable for the textile industry, together with tables of specifications for standard filters, and information showing the extra profits to be made by the mill through reduction in costs and process difficulties, through removal of undesirable impurities in water. Permutit Company, 330 W. 42nd Street, New York, N. Y.

124. New Condensed Catalog on Ball Bearings and Power Transmission Units—Combines all of the information and the industrial uses of radial ball bearings as well as the Fafnir power transmission line of wide inner ring and ball bearings. It gives complete information, interchangeability tables, dimensions, prices, etc. Fafnir Bearing Company, New Britain, Conn.

127. Vim Short-Center Drive with Vim Tred Leather Belting.—16 page booklet outlining the special requirements of belts for short-center drives and the proper adjustment to give the highest efficiency. E. F. Houghton & Co., 240 W. Somerset St., Philadelphia, Pa.

128. Houghton's Hand Book for the Hosiery Dyer—This book contains the result of 69 years of experience in research and development of processing materials for the textile industries, together with a wealth of other data useful to every hosiery dyer. E. F. Houghton & Co., 240 West Somerset St., Philadelphia, Pa.

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131. Houghton's Leathers for the Textile Industry—This valuable handbook contains 88 pages of data on the proper selection and application of all types of textile leathers, including belting, special spindle belts, round leather belts, loom leathers, mill strapping, leather aprons, etc.—E. F. Houghton & Co., 240 W. Somerset St., Philadelphia, Pa.

132. Houghton on Sizing Products—Thirty-two pages of valuable information on sizing of cotton warps and yarns. Gives detailed information on how to conduct sizing tests and contains tables for recording results. It describes the requirements of different types of yarns and gives actual formulas for producing desired finish. E. F. Houghton & Co., 240 W. Somerset St., Philadelphia, Pa.

134. STA-PUT Lubricants—A brief description of an entirely new type of tough film lubricants which not only gives greater protection to bearings but eliminates oil drip and reduces lubrication costs. STA-PUT Lubricants are made in grades to suit all types of textile machinery. E. F. Houghton & Co., 240 W. Somerset St., Philadelphia, Pa.

135. The Pick Method of Weaver Wage Payment—A manual of practical information describing methods to be followed in using Pick Counters; suggested forms, and tables included. Durant Manufacturing Co., 1932 No. Buffum St., Milwaukee, Wis.

139. Textile Detergents—Theory of the use of alkalis and control of pH.—This 32 page booklet explains in simplified manner for the benefit of the layman the chemical processes that take place in using textile detergents in the finishing of textile goods. It contains many useful tables and data. Detergent Products Corp., Peachtree Bldg., Atlanta, Ga.

140. Textile Machinery—Improvements in Design and Methods of Lubrication. A discussion of the problem of lubrication of textile equipment covering operating conditions and factors affecting and affected by lubrication. Card Room Operations, Twisting and Spinning Machines, Silk Throwing, Looms, Knitting Machines, etc., covered. Available in copy of June 1934 issue of "Lubrication." The Texas Company, 135 E. 42nd St., New York City.

141—V-Belt Engineering Data Book—Over 50 pages of pertinent engineering information including data on selecting a V-Belt drive design of special V-Belt drives, numerous standard tables, charts and belt and sheave list prices. Manhattan Rubber Manufacturing Div. of Raybestos-Manhattan, Inc., Passaic, N. J.

143. Winders and Winding—Describing the various processes in the preparation of cotton, woolen and silk yarn and illustrating and describing the different types of Universal winders and the various attachments to suit the particular winding requirements of the various branches of the textile industry. Universal Winding Co., 95 South St., Boston, Mass.

Continued on Page 138

things over more information will be obtained.

On page 77, September issue, a man goes back several years to bring up the question of why the ends on a slubber run slack until the bobbin is about half full and then run tight for the rest of the set. There are several answers given and I will simply contribute my own experience. I worked in a mill some years ago where we had that trouble; at the time I had very little experience on fly frames and did not know what was causing it. After trying many things, with the second hand in charge, we did this, and the trouble was overcome: We put on a cone belt that was slightly longer. This may not sound like a true story but it is an actual happening. I have thought about this many times and the only conclusion I can reach is that the cones were not properly constructed and at this particular place the belt became tight and could not move the required distance at each change of the builder.

CARDER (MASS.)

More Practical Hints on the Stafford Loom

FURTHER inquiries have been received by "CONTRIBUTOR No. 6356" with reference to the mechanism on the Stafford loom. These asked:

1. Please explain also what causes the shuttle to turn over in the box when the conveyor is taking it in.

2. How do you know when you have the right tension on the leather-lined friction clamp on the conveyor shaft?

The answers from "CONTRIBUTOR No. 6356" follow:

Question No. 1. See that the magazine and conveyor are set properly. (Refer to the article published on page 91 of the May 1935 issue of COTTON.) See that the front board lifts properly, and that the lifting lever runs true on the cam. Sometimes the lever stud becomes worn and lets the lever swing to the outer edge of the cam. This will let the front board drop down slightly, as the conveyor enters the box with the shuttle, and will strike the top of the shuttle there, by turning it over. See that the ejector does not protrude into the shuttle box, but drops back when its duty of ejecting the spent shuttle has been performed. See that the loom stops in the proper position, about four inches from the fell of the cloth. Make sure that the cams are timed correctly, and that the conveyor lever guide holds the conveyor true in its movement, but does not bind it. Have the receiver box set just as high as possible not to strike the conveyor lever, when the lever drops back to take the shuttle from the magazine.

Question No. 2. The proper tension for the leather-lined friction clamp on the conveyor shaft will have to be determined through practice. See that there is a good, smooth leather lining, not soaked with oil, and that the spring is good. Put just enough tension on to steady the shaft while the change is being effected. With the double thread worm on the change clutch, that is being used by some mills, all settings and timings have to be more exact. I am happy to say that I do not use this as I believe there is more loss than gain from its use.

CONTRIBUTOR No. 6356

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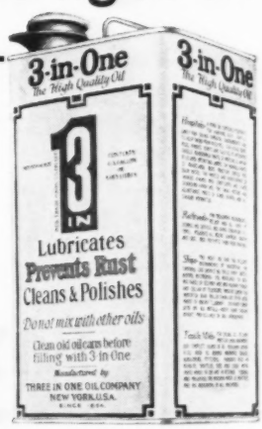

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Continued from Page 136

147. Let's "CAN" The Oil Can—describing permanently sealed bearings for life, and for higher speeds and temperatures single seal ball bearings which have to be lubricated only from one to three years. New Departure Mfg. Co., Bristol, Conn.

148. Leather Packing—.28 page booklet giving timely hints on the proper selection and installation of leather packings, the various types available, sizes and prices. Alexander Brothers, Inc., 406 N. Third St., Philadelphia, Pa.

150. Engineering Data Book on Mechanical Rubber Goods—21 pages of useful information and engineering data, designed to simplify the selection of belting, hose and other mechanical rubber goods for industrial service, including a review of belting requisites for a wide variety of uses as well as helpful tips on installation procedure. B. F. Goodrich Co., Mechanical Division, Akron, Ohio.

152—Plant Checkup List—Crane Co., 836 South Michigan Ave., Chicago, Ill.

154—Johnson Bronze Bulletin No. 340—showing over 600 sizes Johnson general purpose bronze bushings. Johnson Bronze Co., New Castle, Pa.

155. Link-Belt Catalog 1274 on the P.I.V. Gear—giving details of this positive variable speed control. Link-Belt Co., 910 South Michigan Ave., Chicago, Illinois.

156. Link-Belt Engineering Data Book No. 125—showing features and giving engineering data on Link-Belt silent chain drives. Link-Belt Co., 910 South Michigan Ave., Chicago, Ill.

157. Grading Rules and Complete Specifications for Laying and Finishing Maple Floors—Maple Flooring Manufacturers Association, 1794 McCormick Bldg., Chicago, Ill.

159. Corrugated Boxes and How to Use Them—a reference book for use in the selection and packing of corrugated fibre shipping boxes. Hinde & Dauch Paper Co., 454 Decatur St., Sandusky, Ohio.

161. Fence—How to Choose It—How to Use It—book explains in detail how to chose a fence, determine values and prevent costly mistakes. Cyclone Fence Co., Dept. 4211, Waukegan, Ill.

163. Roto-Koner—Bulletin describing the new No. 44 Universal Winder, known as the Roto-Koner for winding knitting yarns, which has many new and distinctive features. Universal Winding Company, 95 South St., Boston, Mass.

164. Johnson Rotary Pressure Joints—Bulletin describing this rotary pressure joint which requires no packing, no lubrication and no adjustment, giving installation and maintenance instructions, types, sizes, dimensions and prices. The Johnson Corp., Three Rivers, Mich.

165. New Departure Speed Power Unit—Bulletin giving details of this compact, self-contained driver that gives a thousand different speeds at a turn of the wrist. New Departure Manufacturing Company, Bristol, Conn.

166. Better Cones The World Over—Bulletin describing the Universal No. 50 Winder for silk and rayon. Universal Winding Company, 95 South Street, Boston, Massachusetts.

168—The Tube-Tex for Tubular Knit Goods—Bulletin describing this modern machine which extracts, processes, dries, conditions and folds in one continuous operation, lowering costs, saving labor, power, space and waste. H. W. Butterworth & Sons Co., York and Cedar Sts., Philadelphia, Pa.

169. Tube-Tex High Speed Steamer and Finisher—Describing these new steaming and finishing machines for tubular knitted fabrics, which handle cotton, rayons, woolens and mixtures at speeds up to 45 yds. per minute, being unique in that patterns, designs and stripes are furnished straight and free from any distortions. H. W. Butterworth & Sons Co., York and Cedar Sts., Philadelphia, Pa.

170. Gates Textile Accessories—Showing the increased efficiency and economy to be secured through the use of Gates cone belts, evener belts, card bands and loom binder cushions. The Gates Rubber Company, Denver, Colo.

171. Design of V-Belt Drives—48 page booklet full of valuable tables and data showing the type, number and design of V-Belts that will give the greatest efficiency on each particular drive. The Gates Rubber Company, Denver, Colorado.

173. Over the Rough Spots—28 page booklet describing Stonhard resurfacer for repairing and resurfacing concrete, wood, brick and composition floor, making permanent repairs to badly worn surfaces. Stonhard Company, 401 North Broad St., Philadelphia, Pa.

174. Robertson Chain Link Fencing—giving details and specifications of Robertson chain link fencing, providing efficient and low cost protection for mill property. W. F. Robertson Steel & Iron Co., Elm & Second Sts., Cincinnati, Ohio.

176. Sonoco Products—A 60 page illustrated booklet giving descriptions, specifications and charts of the many Sonoco products, including: bobbins, cones, tubes, cork cots, roving cans, spools, rolls, etc. Sonoco Products Co., Hartsville, S. C.

177. New Advances in Loom Equipment—12-page booklet describing discoveries and advances which loom manufacturers have made in keeping pace with these discoveries down to the present time—non-technical, informative, amply illustrated. Emmons Loom Harness Co., Lawrence, Mass.

179. Improved Airplane Propeller Exhaust Fans and Ventilating Equipment—a 40-page catalog showing the important factors to be considered in a propeller type fan to secure the greatest efficiency, with data and tables showing fan capacity and details of each type and size of fan and views of typical installations. Propellair, Inc., Springfield, Ohio.

180. These Extra Cushion Cork Cots Offer Six New Advantages—a 6-page folder which tells the story of the new Armstrong's Extra Cushion Seamless Cork Cot from the viewpoint of the mill man. The folder describes HOW the new cot is of advantage to mills spinning cotton yarn; WHY it is better, and something about its method of manufacture, and also gives PROOF in the form of some tests that have been made with this new roll covering material. Armstrong Cork Products Co., Textile Division, 930 Arch St., Lancaster, Pa.

181. Eagle Penetration Roll—Illustrated pamphlet showing the advantages of the new Eagle Penetration Roll, made to fit in any type or model slasher size box, with complete description and suggestions for installation. Eagle Iron Works, Greenville, S. C.

182. M. & M. Hooks and Levers—Illustrated pamphlet descriptive of the M. & M. Hook and Lever, the latest improvement in weight levers. Illustrations show the construction of the lever and the importance of proper weighting of the top roll is stressed. M. & M. Textile Lever Co., P. O. Box 1552, Greenville, S. C.

183. Schieren-izing—describing leather belt manufacture from the selection of hides through the various processes to the final tests, also showing illustrations of belts with unusually long service lives. Chas. A. Schieren Co., 31 Ferry St., New York, N. Y.

184. Speed Control Handbook T-35—new reference book on variable speed control, said to be the most complete and helpful book on this subject ever published, 112 pages and more than 200 illustrations of interest to every production executive, purchasing agent, superintendent, overseer and master mechanic. Reeves Pulley Co., Columbus, Ind.

185. Dulux—The White Finish that Stays White—New book describing the new ten-point finish for factory walls and ceilings, the finish that stays whiter, stays cleaner and stands repeated washings. E. I. duPont de Nemours & Co., Finishes Division, Wilmington, Del.

186. F-7 Feeder Bulletin—Describing the better blending that is secured and the important cleaning operation that is added by using F-7 feeders in place of bale breakers. Saco-Lowell Shops, 147 Milk St., Boston, Mass.

187. The Wildman Single Head Full-Fashioned Hosiery Machine—Literature on request from the Wildman Mfg. Co., Full Fashioned Division, Norristown, Pa.

188. Form 374—This form enables you to gather your own cost data on your sewing machines and determine whether new Union Special Machines will show big savings. Furnished free by Union Special Machine Co., 400 No. Franklin St., Chicago, Ill.

189. Walker Steel Products—Eight page illustrated catalog descriptive of the Walker method of quickly, checking the efficiency of machinery. The improved one-unit switch case and pedestal for above or below floor installation, is discussed in a practical manner. Walker Electrical Co., 526 Means St., N.W., Atlanta, Ga.

190. Warp Conditioning Units for Synthetic Yarn Slasher—booklet giving full details will be sent free to mill men who write on their company letterhead. Chas. B. Johnson Co., Paterson, N. J.

191. The Bahnson Humiduct—bulletin describing Bahnson Humiduct system which combines humidifying, heating, ventilating and air conditioning all in one unit, will be sent free on request. The Bahnson Co., Winston-Salem, N. C.

192. Wood Tanks for Every Purpose—100 page illustrated catalog showing the advantages and lasting qualities of wooden tanks. Rubber-lined tanks for dyeing and other uses in the mill are illustrated and discussed in detail. Hauser-Stander Tank Co., Ammen Ave. and Spring Grove Ave., Cincinnati, Ohio.

193. Short Cuts to Power Transmission—72 page illustrated booklet containing all information needed in solving any ordinary belt transmission problem, informative material on belt joints and transmission practice and a quantity of useful tables and data. Flexible Steel Lacing Co., 4607 Lexington St., Chicago, Ill.

194. Accurately Checking Spindle Speed—A three page booklet describing the Strobotac, a tachometer operating on an entirely new principle for observing and measuring spindle speeds anywhere between 600 and 14,000 rpm. General Radio Co., 30 State St., Cambridge, Mass.

195. Never Buy Sponges in the Rain—Booklet outlining the importance of knowing the percentage of moisture in a given textile in the buying and selling of the same and in connection with the working of textile fibres in the process of manufacturing the goods, also showing different types of conditioning ovens for determining moisture content. Emerson Apparatus Co., 174 Tremont St., Melrose, Mass.

196. Economy of Diesel Engine Power—Bulletin No. 3030, 44 pages, illustrated, giving advantages of diesel power in industrial plants. Fairbanks, Morse & Co., Chicago, Ill.

197. Extra Life for Chain Link Fence—A folder telling about Bethanized Wire and explaining its advantages for mill and factory protection. Anchor Post Fence Co., Eastern Ave. and Kane St., Baltimore, Md.

198. The Perfect Loom Let-Off—Folder pointing out the advantages of the new asbestos friction loom let-off and giving specifications and price list. Fiber Mfg. Co., Newton, N. C.

199. Arctic Syntex A and T—A 57 page booklet describing the various operations in which Arctic Syntex, the newest fatty acid derivative, can be used. It contains many useful diagrams as well as the history of its development. It explains fully the unique and varied uses of Arctic Syntex in processing. Colgate-Palmolive-Peet Co., Jersey City, New Jersey.

COTTON, Grant Bldg., Atlanta, Ga.

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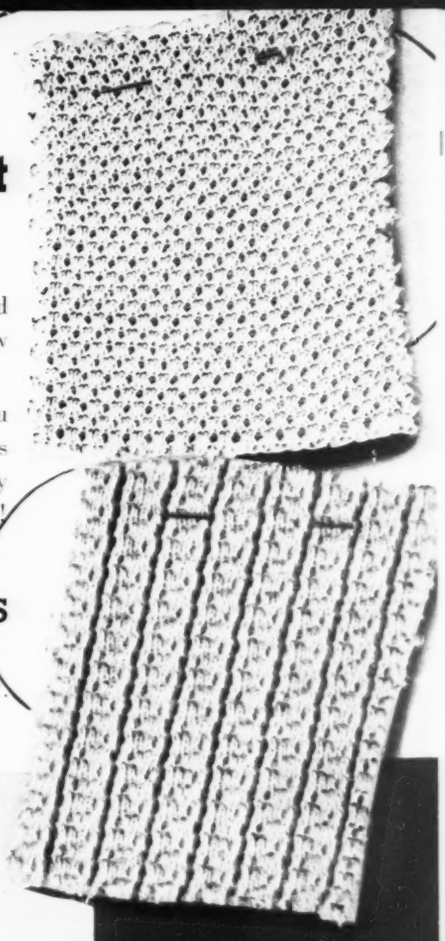

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INCORPORATED

366 BROADWAY, NEW YORK, N. Y.

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THE STANDARD 80-W SHOG MACHINE makes fine gauge men's half hose that are truly EXCLUSIVE. No other machine offers so many pattern possibilities and such a wide variety of effects that rival the costliest importations of Fifth Avenue's smart shops. It's a *unique* machine . . . and its products are the answer to this man's dilemma. Why not use the Standard 80-W Shog Machine to get his business . . . and at the same time create prestige for your mill?

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KNITTING SECTION

Some Pertinent Comments on Full-Fashoned Modernization

By GEORGE ADAMS

IN THIS article, a recognized expert looks at the full-fashioned hosiery industry as a whole, and at the individual mill's problems . . . He reviews recent developments, and comments on some of the more advanced, established opportunities available to the industry and to the mills in it . . .

The point of his entire discussion may be summed up in the "punch-line", with which he concludes:

"Since we pay for it anyway, why not have modern equipment?"

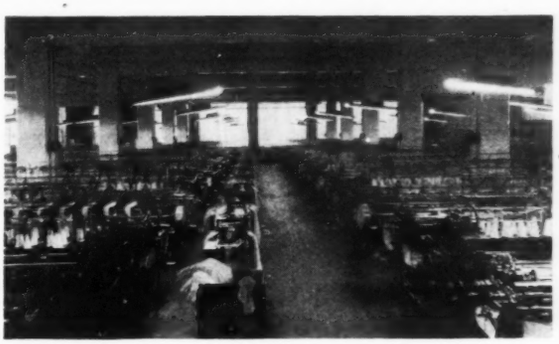
FULL-FASHIONED hosiery manufacturing during the past five years could be likened to a parade and the celebration which usually follows. Generally speaking, the industry had its grand march about 1929 and with little exception, having had such a grand march and grand reception afterward, has rested too contently well after the feast.

It is true there were several minor celebrations since, each with its attendant parade such as high twists, laces and meshes, lace tops, and, of course, ringless. Each of these had its stimulus to keep the machines in step with the times.

The hosiery industry, along with the rest of the textile industry, can be accused of having watched too long the parade of modern developments go by its door. Some mills have made a half-hearted attempt to join the parade, but many mills have just watched. These latter mills have not stood still, they have actually gone backward.

In some mills it is almost too late to catch up and, not having the "depreciation" money, the condition may prove fatal. It is poor business for a mill to take depreciation into account when calculating costs and not set that fund aside for actual replacement or modernization, the very purpose for which it was taken. Here we are with many mills almost "depreciated" as to equipment and plant, but where is the money which will supply the oxygen to keep the patient alive?

While it is true that "depreciation money" did come in mighty handy to overcome operating losses and others and maybe keep the mill going, continued use of that fund for this purpose has simply delayed the inevitable awakening with an old mill and handicapped efficiency.



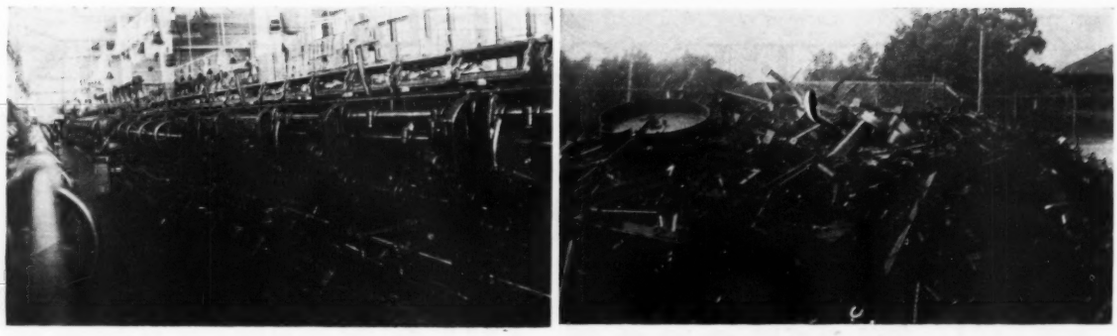
In an attempt to make the old-time soldier self-sustaining in the field of operations, he was considered by experts of the day to be something to hang things on. Similarly, some of our present day full-fashioned machines can be likened to that soldier because they, too, have had many things hung on an old-time machine in an attempt to make it pay its keep when fighting against modern equipment.

While it is good practice to keep machines up-to-date by the addition of mechanical developments not originally on the machines, such as lace-tackle, ringless, heel-in-heel attachments, etc., one important factor must not be lost sight of. The old type of the machine still remains after all the modernizing has been done.

Fallacy of Only Keeping Old Machines Modernized

Assume the mill has some 20-section, or 24-section, 42-gauge machines which have turned out their share of dozens in so many hours of operation over, say, the past eight years or more. These machines represent a certain part of the assets of that mill (since their replacement money has been spent for other purposes) and they cannot be replaced by new ones; a certain amount of money can be spent to "re-build" them. Consideration must be given here to the space occupied by such machines, labor rates effective thereon, amount of additional money needed to re-build or modernize them, as against the amount of dozens and type of product at a total return of so many dollars finally delivered by the revamped machines.

At the same time another factor must also be



"It Takes Courage to Scrap Machines"

And here is an example, reprinted from our August issue, showing views of some of the machines recently scrapped by the Knitting Department of Wiscassett Mills Co., Albemarle, N. C., to make way for modern equipment . . . . . .

kept in mind, namely, 39-gauge machines are surely, though slowly, passing out of existence as a vital market factor, and the older 42's will be—yes, many already are—making today's 39-gauge type goods. There then remains that 42's of the old vintage will get only the low end business while the later 42's meet stiff competition from the 45's.

The section length of machines must also be given consideration because of their lesser production and the wage scales prevailing thereon.

Before any money should be spent, a mill will do well to "take stock" of its standing in the market, the kind of goods it will most likely be called upon to make over the next period of its existence, and whether progress is demanded of it by its customers or whether it will just keep on making more goods "at so much a dozen less". If the latter holds true, the mill better not modernize very much, and perhaps better still let the machines run down to the last dozen to be finally replaced by later types of economical producers.

Moving old machines to a new, more modern building, must not be confused as modernization. The old machines become still more expensive by being moved, and, except where they become a part of an existing mill requiring more dozens of cheap goods, are soon in the market again as "used machines".

"Scrapping" Takes Courage

Selling old worn-out machines is expensive even to the mill selling them, as the practice provides other mills with "cheap depreciation" machines, in spite of the cost of moving, etc., on which to make more cheap goods—but what manufacturer is altruistic to the degree of benefitting himself through benefitting the industry? Wisdom says "Junk them"; lack of courage says "Sell them".

Not so long ago, one of our leading mills scrapped 98 machines, and another scrapped 20 or so.

Operation of obsolete machinery which has been depreciated does not overcome losses. It is doubtful whether we will ever again see a condition when mistakes of judgment, either in raw material purchases, styles, mill management, or otherwise, will be profitable regardless.

Efficient equipment was the main factor in the comeback of one of New England's old textile mills, out of a receivership and into the profit column. Against this we have another mill that was the last word in efficiency at the time it was built in 1921 but had to close up last year because it still had 1921 vintage machines, and only these.

Full-fashioned hosiery machine developments of the past few years have been particularly directed toward the production of more hosiery of better quality. This does not mean that the mill or the merchant gets so much more "per each" for his product. Rather, it means that modern competition has made it necessary to give the consumer a lot more for her money than ever before. In this transition we have seen the gradual change to more chiffons and still more chiffons, even to the point of where some buyers, and mills too, seem to be possessed of sheer insanity in some of the goods they turn out as regards thread for gauge.

Yes, silk is an all-important factor, but to make these fine stockings at all evolves itself into the use of machines in the best condition. To make them economically or profitably makes it imperative that "more firsts" be the only consideration. While leggers and footers of the most modern types have gone a long way in the direction of making quality hosiery, interruption of the primary manufacturing step, the knitting, still takes its toll.

The answer to this question is found in the number of American and Canadian mills who have during the past three or four years installed and operated such machines. Some of these mills are reported to have made further installations after practical and prolonged operation of their initial machines, as is similarly reported to be the case in some English mills. Single-unit machines do not produce as many dozens per week as do legger-footer type machines, but they do produce more available firsts per machine or per thousand pounds of silk. Mills have found that the smaller poundage lots of silk going onto the single unit machines, the completion of the primary operating, knitting, on one machine, both for simplified stock keeping, style changes, etc., and the absence of the topping line, are factors that result in manufacturing economies and improved quality.

Before considering any single unit machine, the

mill man must ask himself whether it makes the full-fashioned stocking the consumer knows, and makes it better; whether it has proven practical in other mills; whether it is another experiment; whether his mill is ready for it. If the answer to each of these questions is "Yes", and the mill is in need of modern equipment either for production or marketing reasons, the executive will do well to look into the single-unit machines at first opportunity.

Welts have progressed from the cotton top through the cotton back and all-silk welt until now we actually have high twist yarns used in the welt. Thus is overcome the difference in shade between the high twist boot and the tram twist welt where the contrast is not desired. About five years ago, the writer advocated the use of 14½-inch needle bars on 45-gauge and finer, anticipating the condition with which we are faced today. Now we see mills "putting back" into operation every possible needle in the knitting head so that a welt having the proper balance of courses for the yarn used possesses the necessary elasticity and stretch. Mills considering new equipment should also give major consideration to this factor.

Non-run has come and more or less gone. Some non-runs will stay, either as further attempts along previous lines, or as a result of mesh and net effects. Non-run is not so much a factor in view of the snag-proofing results brought about slightly by so-called finishes, but more so by the high twists now in use. Crepe yarns, or so-called crepes and balanced twists, are less snag-able and therefore also less run-able.

The Crepe Hosiery

While on the subject of crepe it will do well to remember that compacting silk yarns into finer diameters only shows up more of the machine defects. Crepes, balanced twists, are on their way into the market in a big way and will most likely stay with us a long time as a fitting companion to "high twists". Their sheerer appearance and pebbly effects are the style, and their utility angles materially assist their widespread demand.

"Ringless" is a Forward Step

Ringless has, since its earliest stages, been held by the writer to be a definite step toward making a good stocking still better. Having promised the consumer perfection in hosiery, we must live up to those promises, extreme though some of them may be. Non-ringless sheers, in our opinion, will remain as long as there is a need for goods at "in-between" prices lower than the upper quality groups of the respective gauges.

Air Conditioning Important

Air conditioning and humidification of the full-fashioned knitting room has long ago passed its experimental stages, and the mills not adequately equipped in this respect are paying a penalty through lack of uniformity of product and lessened efficiency of their help. Until air conditioning apparatus can be installed, a mill must give greatest care to the silk conditioning room, distribution of "conditioned" cones, water levels in troughs of yarn boxes, etc., etc. Air conditioning does not, however, overcome need for vigilance in the matter of acid reaction upon silk.

The goal of machine manufacturers the world over is no doubt the perfection of automatic devices to lessen the failure of the human element and also to dispense as much as possible with dependence upon a high degree of skill in machine operation. Theoretically, it is possible to build a full-fashioned hosiery machine that would function automatically with only a machine tender to run it. Use of these theories has not yet progressed sufficiently far to justify loading up the machine to the extent necessary, while all those that could be incorporated practically have not yet proven themselves economically.

Reducing the Element of Human Error

Many who have studied the operation of some of the latest types of machines have noted that they emphasize a definite trend in machine building in the direction of attempting to overcome the danger of failure of the human element considered so necessary in the operation of a full-fashioned machine. One or the other of them is almost automatic and, within reason, safely so.

There still remain certain important manual operations which today can only be done best manually without over-loading the machine or going beyond the safety factor.

Among the automatic features that have been mill-tested are the control of stitch regulators, rockers, frictions, loose coursing, racking out, oiling, and one or two others. Still being tested are carrier control, welt turning, and no doubt others equally important.

In Conclusion

If a mill accountant were to present his statement showing an account "Loss due to operation of out-of-date machinery", mill heads would soon do something about this "Topsy, that just grows". What mill man is satisfied with the car model of the vintage of his knitting machines? Such a mental comparison helps bring home the fact that the world changeth inside the mill, too. Labor has long since learned that somehow it shares in the benefits of improvements in equipment and manufacturing processes. Difference in product both in quality and quantity at definitely less per unit cost proves above all the justification of modern equipment. Since we pay for it anyway, why not have modern equipment?

A Seamless Mill Goes Modern

By ALBERT T. RUSSELL

ALMOST any knitting mill will find here some ideas on maintenance and modernization. This well-written account is based on what was actually done—from boiler plant to finishing and shipping room—to modernize and properly maintain a seamless hosiery mill. In the telling, much of practical application is given . . . . . .

A FEW years ago I had the good fortune of being connected with a fairly large seamless mill that had in its day been one of *the* mills. For some reason unknown to me and many others who played comparatively small parts insofar as the management of the mill was concerned, the mill simply was not getting anywhere. We were making money, to be sure, but we were not making enough money, and earnings were declining slowly but surely, and that isn't healthy.

The stockholders apparently had been in a huddle, for there appeared in our midst a new manager, a man who (as we were soon to find out) had vision, who knew *what* to do and *how* to do it. He made plans *today* and put them into effect *immediately* and did not wait for tomorrow, next spring or next fall; his *convenient season* was *right now*. As I look back I realize that he was a modernist in the fullest sense. His first move was to organize an executive club and in our first meeting he made a short talk, putting much stress on two points. He said, "Above everything else I want you boys in your daily work to do two things, *observe* and *think*." And what a keen observer he was, he had an eye like a hawk.

The Boiler Room Came First

Yes, we went modern, and of all places, right or wrong, we started in the boiler room. We had three 200-hp. boilers that had been in use for quite a number of years. They were eating up plenty of coal and were not delivering enough steam. It looked as though the mill had outgrown its boiler room and there was some talk of adding a boiler, which meant a lot of expense. It so happened that a boiler inspector dropped in to make an inspection of our boilers and our master mechanic told him of our boiler problem. He suggested that we first try to *increase* the *efficiency* of our *existing* boilers and recommended a man who knew boilers and could make them behave. Our new manager made short work of getting him on the job.

After going over our boilers carefully, he suggested that the grates be lowered about 16 inches. He said that the fuel was too close to the belly of the boilers, that automatic stokers with forced draft should be installed as they would give good results with a cheaper grade of coal and that a hot water return system be worked out whereby all hot water from radiators, hosiery drying forms, etc., would be returned to the boilers, thus supplying a large amount of preheated water. After a careful internal inspection of one boiler he said that our feed water treatment evidently was not suitable; the flues were not as clean as they should be. He took samples of the feed water and scale and said he would see to it that we got feed water treatment made up especially to suit our water which would not only remove old scale but would to a great extent prevent new scale from forming.

Our manager gave instructions to do the job as outlined and in a few days the stoker was pushing in coal like nobody's business and the old boiler was truly putting out steam. It made the other two look sick.

The other boilers were completed in due time and the hot water return system hooked up. The feed water treatment had arrived and arrangements were made to feed it continuously; while the boilers were carrying a full load more treatment was used and it was cut down proportionately when the load was reduced. Our master mechanic inspected the flues after the first week's run and reported them to be in better shape than he had ever seen them and he added that the new treatment "sure is hell on scale."

Now, I am not a boiler man, but have merely tried to put into writing what I saw and heard. Our manager reported that the entire expense would be absorbed in a reasonable time by a reduction in fuel bills and lower labor and maintenance cost. So, in the end, we had modern boilers, with greater efficiency and reduced operating costs. Yes, it pays to modernize.

Then the Machine Shop

It appeared as though our master mechanic was getting all the breaks, for our next step in our modernizing program was in the machine shop. Our master mechanic was a go-getter, for he soon convinced our manager that he could reduce the general maintenance cost by adding several new machines in the shop which would enable him to do jobs which had formerly been sent out due to lack of equipment. The shop was also blessed (?) with an antique welding torch. No doubt it had paid for itself many times over for it had seen plenty of service. A new up-to-date torch with all the latest gadgets brought the shop up to par. No doubt the mill had actually lost money by keeping the old torch in use too long.

Looping and Inspecting

The time had arrived for our next executive meeting and it took but a short while to convince our manager that all department heads had been faithfully observing and thinking as per instructions; everyone had something to iron out in his department. Some suggestions were tabled; that of course had to be expected. However, some worthwhile change was eventually made in practically every department.

The looping and gray inspection departments came next. These departments were well laid-out and equipped with motors, shafting, work trucks for moving goods, up-to-date machines, inspection forms and other necessary equipment for both departments. They lacked two important things, as pointed out by the head of these departments—sufficient heat during the winter months, and light. The artificial lighting arrangements were satisfactory. What was needed was more daylight. Short work was made of straightening out these two departments. The old narrow wooden frames were replaced with up-to-date steel sash which were much larger and therefore let in more daylight. A fresh coat of white paint in addition to new windows helped reduce light bills materially, not to mention a substantial increase in production per operator.

Changing the window frames actually killed two birds with one shot, for during the first cold spell both departments were plenty warm. The old window frames not only kept light out but they let cold in due to poor construction. Many mills spend time and money putting on weather stripping, patching up old window frames, etc., every fall. The big argument is that steel sash costs too much. Well, when we put in steel sash we were through, and if we had continued patching up old wooden frames, we would have just kept up doing it, and by sticking to it long enough, a mill will have paid for steel sash and still have nothing.

The Knitting Department

The knitting department was in good shape as far as heating and lighting were concerned. It needed a coat of paint badly and got it without delay. The mill had always kept its knitting department up-to-date by adding new machines as soon as they were placed on the market by the machine builders. The mill took pride in being first to give its customers merchandise of the latest design and construction. New devices and attachments were added to older machines which enabled the mill to offer both current and advanced styles in its particular lines. Several new grinding and polishing stands were added for, as the knitting foreman pointed out, his men had to stand in line and wait their turn to do a small job, and he added that while they were waiting their machines were idle.

A half dozen new work benches were built, each bench was supplied with a good vise and tool drawers which left each machine fixer with a work bench for his personal use. This helped a great deal to speed up the work and proved to be a profitable investment.

Re-vamping the Drives

The main drawback in the knitting room was a poor arrangement of motors and line shafts. Large motors were used with a series of belts running from shaft to shaft along the wall, as many as four shafts being driven by a single motor. This naturally meant a loss of speed on the shafts farthest from the motor, not to mention the loss in production, time spent in tightening loose belts or splicing breaks. It was also poor economy to use a large motor driving four shafts, and use two shafts and let the other two idle along for five nights a week on the second shift. All of these difficulties were overcome by trading in the large motors for smaller sizes ranging from 2 to 5 hp., according to the number of machines per shaft. All line shafts were equipped with individual motors and drives which meant that only one line shaft would stop in case of motor or drive failure instead of four shafts with the old arrangement.

The Ribbers

The ribbing department was housed in a new wing which had been added to the building; this wing was modern in every respect and therefore needed no attention. Individual motors and drives of latest design were used, and there was but one thing lacking—two of the line shafts had the old plain type bearing hangers which were constantly giving trouble. These were replaced with new anti-friction bearing hangers which put these shafts in A-1 shape. Several grinding stands and work benches were added in the rib department, for when the knitting room foreman was making his plea for this equipment, the rib room boss said, "Me too," and got it.

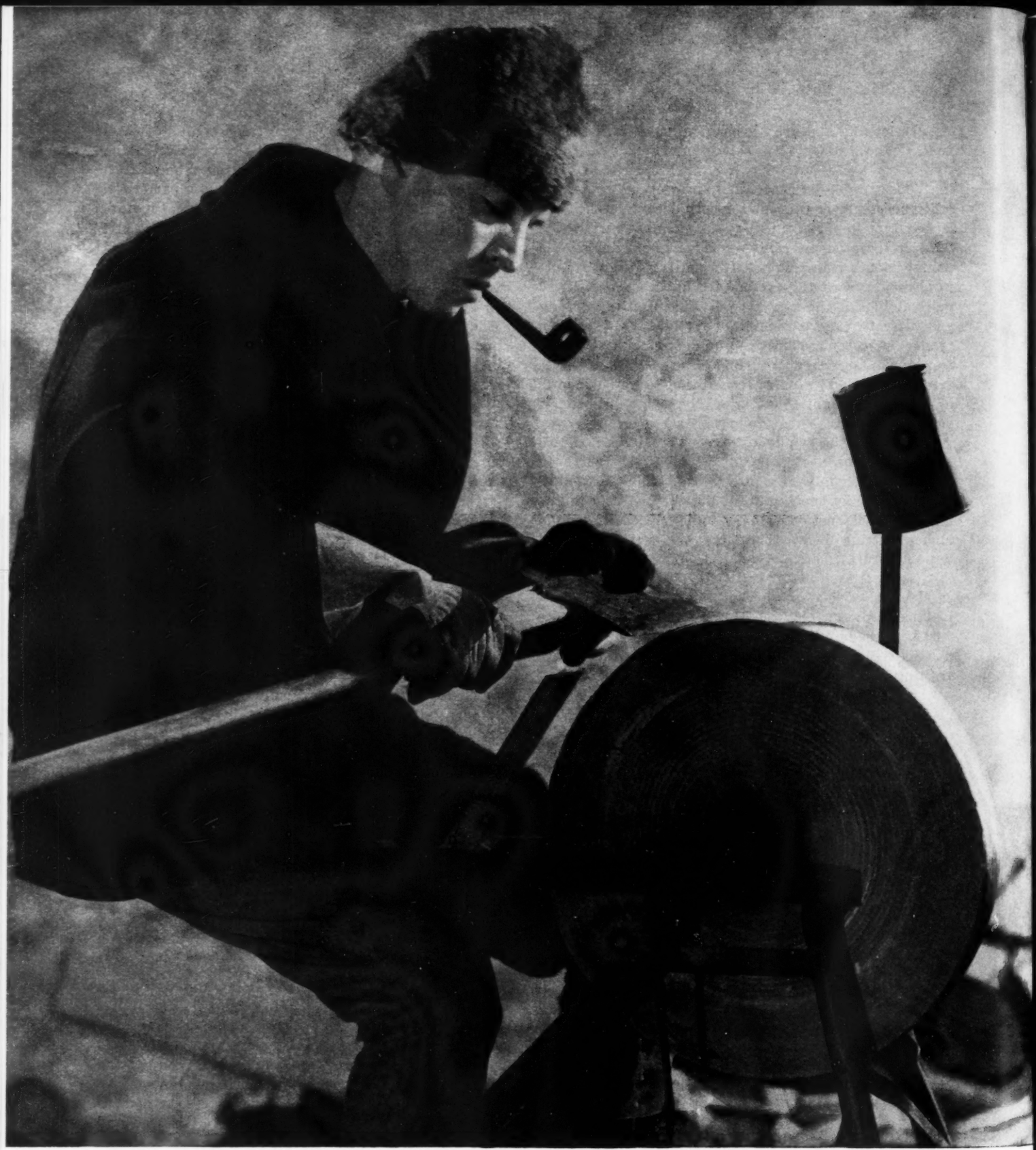
Several types of ribbers were used in the rib department. All machines were equipped with the latest, up-to-date attachments. New machines were added whenever they were available, which put the rib department second to none and far advanced to many. Since the mill offered only high grade ribbed numbers, all machines were kept in jam-up shape; they had to be, to deliver the goods.

Then, the Dyehouse

The dyehouse, like any other department of the mill, must be kept up-to-date. Today's hosiery cannot be dyed in an antique dyehouse. Our dyehouse was well laid out in a single story building with a saw-tooth roof, plenty of daylight and ventilation. In making a request for some additional equipment our dyer stated that he had three extractors, one in excellent shape, and the other two needing some repairs very badly. Our manager disagreed with the dyer, saying, "As I see it you have one extractor and two pieces of junk." Our dyer, being a modest chap, came back with, "That's what I was thinking, but I try not to be offensive." Our manager suggested getting rid of the two junk heaps and getting one new up-to-date machine, and the dyer agreed that he could handle more goods with two good machines than with his previous equipment. He soon demonstrated his claim, for the new extractor arrived and there was no more delay in getting goods through.

Another request by the dyer was for a better grade of valves. He had been testing two valves which were recommended as being especially adapted for dyehouse use and found them very satisfactory. They were somewhat higher in price than ordinary valves, but they gave a great deal more trouble-free service which made them cheaper in the long run. The new valves were added as needed.

Perhaps in no other part of the mill is machinery and equipment subjected to greater abuse than that in the dyehouse. Rust, corrosion, chemical reaction



'The mechanic that would perfect his work must first sharpen his tools"

CONFUCIUS

In a 40-hour week the new READING high-production twenty-four section forty-five gauge full-fashioned knitting machine produces nearly sixty per cent more volume and more than seventy-five per cent more value than the ordinary eighteen-section thirty-nine gauge machine.

TEXTILE MACHINE WORKS • READING, PA.

and other destroying forces are constantly on the job. Fighting these is a never-ending task for the dyer, and herein lies a story—modernizing by "monelizing"—which every dyer can tell.

The final request made by the dyer was something which every dyehouse should have, a combination dressing-shower-locker room for dyehouse employees. The boys not only deserve it, but need it, and our boys gave three cheers for the big boss when their room was completed.

The Boarding Department

Anyone familiar with hosiery mill operations will agree that the boarding room is not as a rule an extremely comfortable place in which to work—especially if it happens to be 90 degrees in the shade on the outside and the room happens to have a low ceiling and not enough windows. We happened to have just such a condition and the foreman of this department made a plea for better weather, stating that his boys could not make the grade during the summer months. Our manager said, "I believe I know the right man for this job and I'll call him today." He did, and the next day his man arrived and he came at a most opportune time. The room was going full blast on a big run of goods. It was hot weather outside and plenty hot and stuffy inside. The weather man, as he was dubbed by the boys, got busy and spent the whole day measuring, figuring, making sketches and what not.

Well, he did the job, and as I recall it he used some intake fans on one side of the room and exhaust fans on the other. The idea was to create a cross-flow of air across the room, thus ridding it of foul air and heat and supplying fresh air from the outside. The building was laid so that one side was constantly in the shade from early morning throughout the day, which made an ideal place to pull cool fresh air in, even in the hot summer months.

The job, when completed, did not cost a great deal. It worked satisfactorily and the boarders were not all fagged out when quitting time came. Changing steam traps on the drying form lines proved to be a profitable change in this department. Many of the traps were bad and as our master mechanic put it, a bad trap not working properly is just another piece of pipe. Traps will not last forever, but our master mechanic was asking for traps which did not cost but very little more than the average trap on the market, but they were guaranteed for ten years. Think of it: Put in a new set of traps and forget them for ten years—another load off of the master mechanic's mind. Yes, it pays to buy modern equipment. It helps to cut maintenance costs.

The Finishing Department

The finishing department needed very little attention in comparison to the changes made in some of the other departments. It needed more daylight and more artificial light and our manager agreed with the head of this department on both points and suggested that the first step toward increasing daylight should be to scrape the paint off of the window panes, and in the same breath he asked, "Why was it put on in the first place?" He was informed that it was impossible to inspect, mate, and stamp goods with the sun shining in on one side of the room in the morning and the other in the afternoon. He heartily agreed to this but added, "Remember, the sun does not worry you on both sides at once, so you are keeping out daylight with the paint on half of the room unnecessarily. Why not get some window shades so we can keep the sun out on one side and let daylight in on the other?" The department head said that shades had been tested, but that they were expensive were not satisfactory. "How long ago did you try out shades?" was the manager's next question. He was told that it had been several years previous. To this he replied, "Several years is a long time in this modern age. New things are being invented every day to help overcome the many difficulties we run into in our manufacturing problems. We must find out who makes what it takes to solve our problems and then go after it." He added that there are window shades being made today that will keep out glare and still let in a good share of light and they can be drawn back when not in use. So, off came the paint plus a lot of dirt on the inside and a like amount of dirt on the outside, and on went the shades.

It looked like a new room when the job was done. It was not a very expensive job in the first place and the initial cost was materially reduced by a substantial reduction in the daily consumption of electric current. The artificial lighting needs were also corrected, not by increasing the number of lights or wattage, but by finding the right type of light. An electrical supply house furnished suitable bulbs and shades which were non-glaring, for the various operations, but still gave plenty of light. Simply another case of using modern equipment developed in and for a modern age.

There were other changes here and there, from the office on down through the shipping department. I have merely picked at random some of the major improvements in the various departments. For in every instance, management made sure that the new equipment was the best obtainable for our particular needs and that all changes or additions would in some way help reduce costs immediately or over a period of time. Perhaps I have left the impression with the reader that the mill was in a heck of a shape generally. It was not, for as stated in the beginning, the mill was making money—but obsolete equipment and a lack of proper maintenance was cutting into the size of the profits.

The mill of which I have attempted to paint a mental picture for the reader did not go modern over night. It would have been suicide to modernize the mill in one year or two years. It took more time than that, plus some careful planning, a great deal of mental labor and of course money. In this day and time a mill must be properly maintained. It is either progressing or slowly but surely slipping out of the picture.

If your mill needs modernizing, don't wait for a convenient season—start now.

Another Comment on the Causes of Looseness at the Edges of Full-Fashioned Fabric

EDITOR COTTON:

I note that "CONTRIBUTOR NO. 6371" has trouble with looseness at the edges of full-fashioned fabric and would like to find out if others could offer suggestions how to overcome this trouble.

In reading over the question I note that the contributor states that they are using a so-called "direct knitting" silk that does not require conditioning or rewinding.

It is my opinion that this trouble does not lie in the mechanical operation of the machine or any of its adjustments but the trouble is in the throwster's treatment of the silk. I have had considerable experience with so-called "direct knitting" silks and I have found that in order to make silk work without either conditioning or re-winding, it is necessary to have the oil heavily bodied and very high as far as alkalinity is concerned.

The result is that the sericen or gum is disturbed and the silk is entirely too soft. This results in what I would call collapsing of the knitted fabric at the selvage of the stocking, and any adjustment made on the knitting machine will not cure this trouble.

Many knitters have given up the use of "direct knitting" silk because it not only collapses at the selvage but is uncontrollabel as far as lengths are concerned.

The lengths may appear all right on a knitting machine but with "direct knitting" oils, the silk stretches very easily due to the high alkalinity and oil content and when it is boiled off uneven lengths are the result.

The fact that the contributor states that verge plates are in good condition, and he has taken all ordinary means of proper gauging of all of the parts that might cause this trouble and I take it for granted that the needles are in alignment, proves that the trouble lies in the kind of silk soaking used by the throwster.

My suggestion, therefore, is that the contributor take this matter up with the throwster and first of all find out what the pH test shows as far as alkalinity is concerned.

I would also suggest that he obtain a silk that is a trifle harsh or in other words, not too soft or oily and put up some cones on a machine that gives him a great deal of trouble. I am sure by this method he will discover that the silk soaking is at fault and it is then an easy matter for the throwster to change his soaking formula to rectify the trouble.

CONTRIBUTOR NO. 6418

WE invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All acceptable contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statement of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

◆ ◆

More About Left-Twist Silk for Knitting and Using Silk Yarn for Seaming

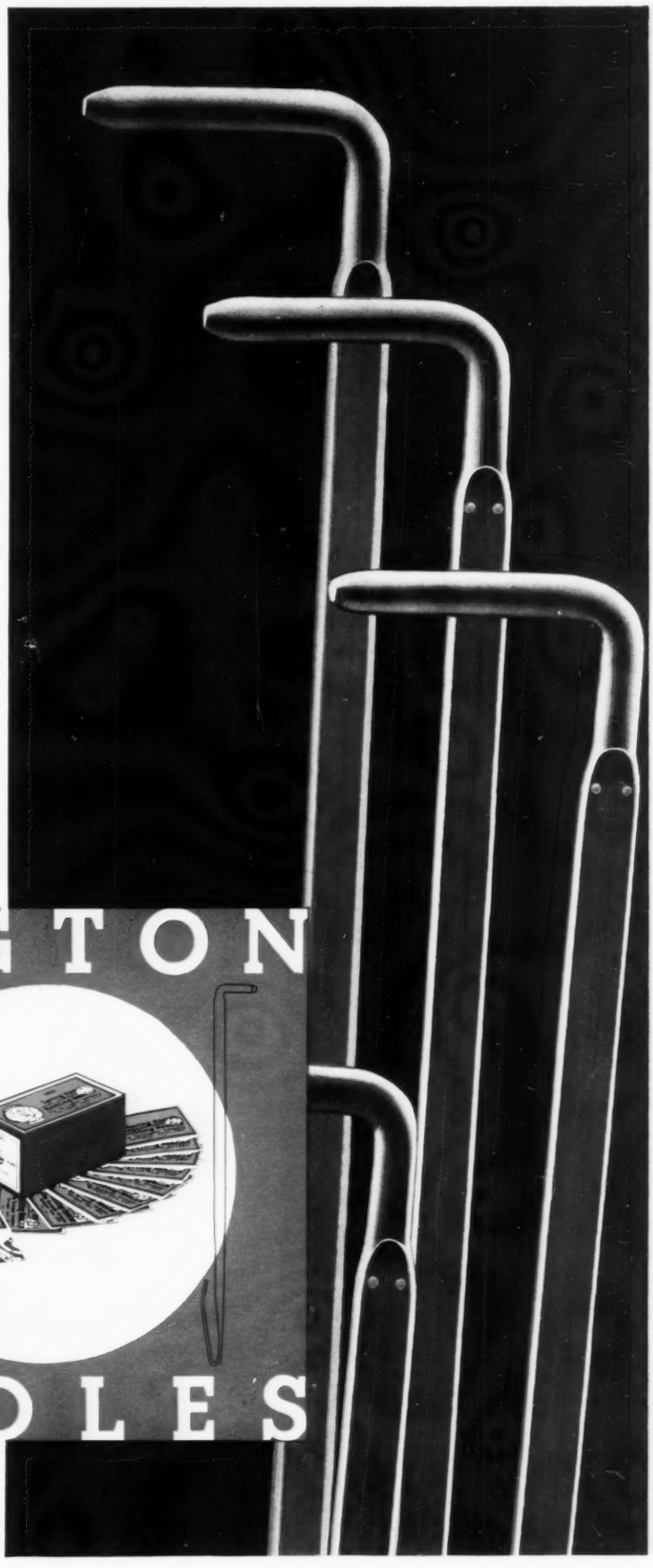
EDITOR COTTON:

It is a pleasure to give our own version or experience regarding the questions asked by "CONTRIBUTOR NO. 6386", on page 131 of your May issue, with reference to (1) using left-twist silk in knitting full-fashioned; and (2) using silk yarn for seaming instead of a cotton thread.*

1. From a careful consensus of opinion obtained from a number of our customers (we are silk dealers and throwsters), we would say that the main advantage of a left twist in a 4-thread 15 turns full-fashioned yarn is in the delivery from the cone rather than the better appearance of the fabric. It seems, especially in three-carrier knitting, that a left twist in the yarn permits the delivery to be made off the cone with a much smaller balloon and leaves the thread clinging to the cone when the thread is not being knit. In other words, the thread does not have a tendency, when made in left twist to balloon away from the

(*) Previous answers to these questions have appeared on page 120 of the June 1935 issue of COTTON, and on page 97 of the July issue.—THE EDITOR.

Machine-made means uniformly bent butts. Every Torrington needle is bent to the exact angle that assures the finest "set" when placed in the hole. There's no guess work about this detail. Machines are used to guarantee an extra degree of accuracy. That's why Torringtons don't vary in over-all length. They're right...in every minute factor that makes for finer, smoother knitting!



RENEEDLING at our Philadelphia and Canadian plants is fast, thorough, economical...handled by experts working with special modern equipment. Each job kept intact throughout process. Bars are washed with a special fluid, straightened with a special device and gauged three ways; spaced also by gauge. Slots checked mechanically. Beards raised uniformly—checked by gauge for height and central setting.

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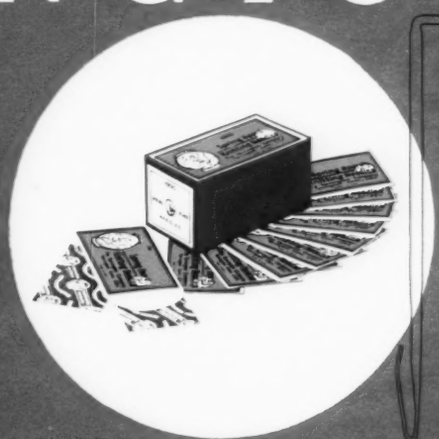

SPRING BEARD NEEDLES

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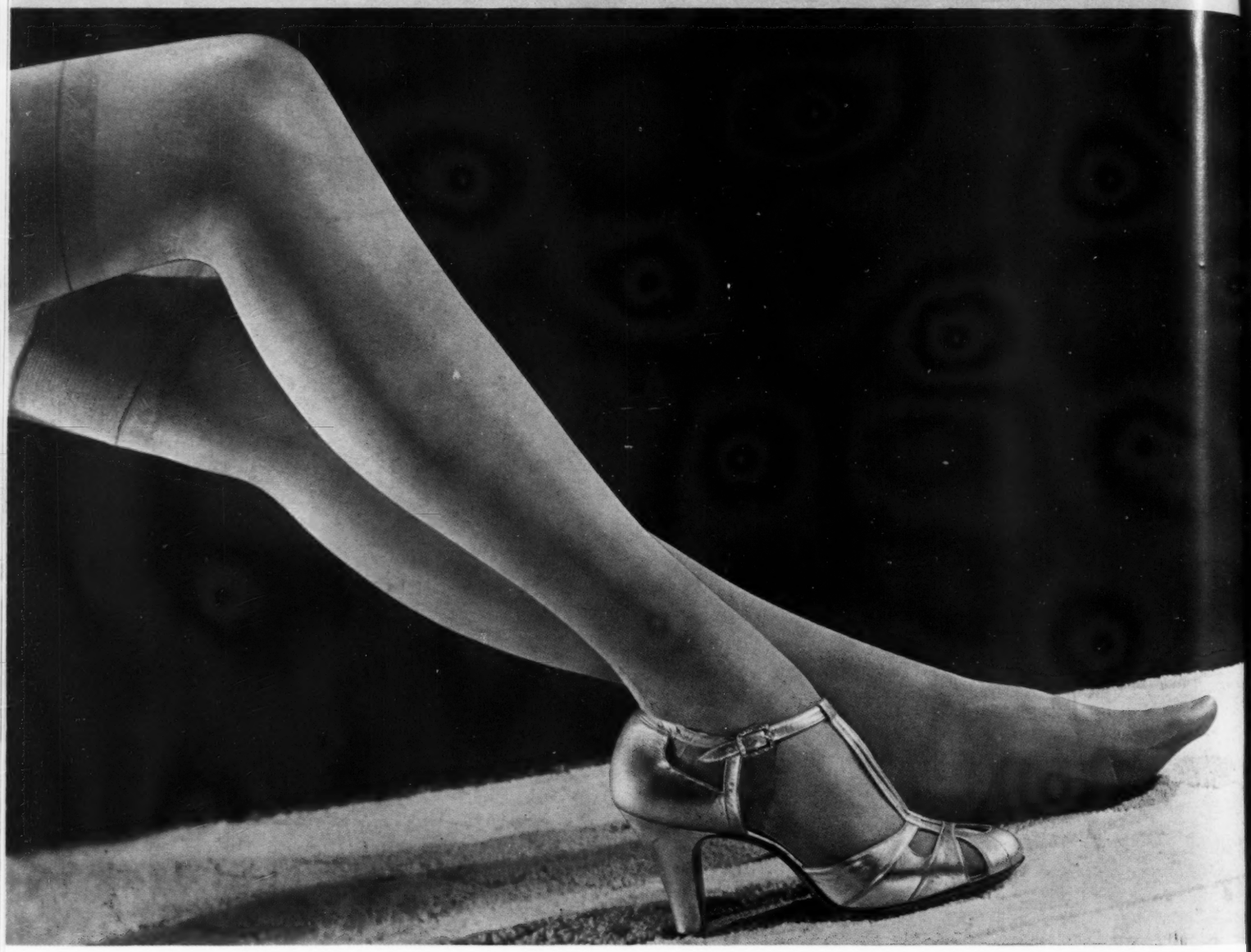

WOMEN buy hosiery for its texture and its color. But when there's little to choose between the texture and color—better knitting helps make the sale! Not one woman in a thousand knows what a latch needle looks like...but they *all* know good knitting when they see it.

Good knitting begins with good needles...and experience has taught the knitting world there is no happier choice than Torrington machine-made needles...stronger ...smoother...more uniform—just right and always right for producing quality hosiery that creates prestige for your mill and makes your customers say—"You can *see* they're better knitted!"

There's a Torrington needle for this type of knitting...and every type of knitting.

The Torrington Company

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cone and fall to the bottom of the cone, causing kinking and other troubles. It permits the thread to rest exactly in the position where it is left off when the knitting is stopped. We believe, in three-carrier work, as well as single carrier, this better resting position of the yarn eliminated a lot of trouble that would occur otherwise. The proof of the merit of left twist seems to be shown in the increasing changing over to it among our customers. These changes have been made, not particularly at our suggestion or solicitation, but have come spontaneously from most of our customers.

2. The use of a pure silk yarn for seaming purposes would seem to have several advantages:

First, a selling point, that the garment is made entirely of pure silk; second, the cost today of using pure silk thread, as against cotton, is about even because of the greater yardage per pound of silk on account of the lighter specific gravity thereof; third, the breaking strength of pure silk is far greater than that of cotton.

CONTRIBUTOR No. 6389.

EDITOR COTTON:

Answering "CONTRIBUTOR No. 6386" as to whether or not there is any advantage in using a silk yarn for seaming instead of a cotton thread, will say that silk seams for two and three thread appear to be more appropriate than for heavier stockings. A well-made seam looks equally neat with cotton or silk thread. Cotton is cheaper and probably wears better than a tram silk or spun silk seam, but not better than 12 to 16 twist, 3-ply 4-thread silk or a similar combination, and too, a silk seam is finer, as the thread is smaller than a cotton thread. However, a combination silk and cotton seam may be used, with silk on the outside for a balance of strength and appearance.

CONTRIBUTOR No. 6390.

Answers to Questions on Dyeing Knit Fabric

EDITOR COTTON:

I am replying to the questions of "CONTRIBUTOR No. 6404", published on page 100 of the August COTTON.

He first asked whether it is practical to dye knit fabric containing cotton and acetates with developed dyes leaving the acetate yarn white; pointing out that he had found that most all developed dyes stain the acetate during the developing process.

In comment on this question, I will say that I have also found that the acetate will stain somewhat during the developing stage. However, this stain may be in some cases entirely removed and in others showing only slightly by giving the fabric, after completing the developing of the color, a good warm (120-130 degrees F.) soap bath, running the goods through a bath heavy enough with a neutral green olive soap and a small amount of phosphate to produce a good suds, and running it for 15 to 20 minutes. It may be necessary to give it a second soap bath containing less soap and phosphate than the first.

To produce a good fast developed shade on cotton, it should be fast to a soap washing, and this treatment will remove any surplus color on the cotton, and at the same time remove the stain from the acetate yarn. Be sure after each soaping to give a good warm and cold water rinse.

One may say that this soap treatment adds to the cost, and it does, but if the results which are desired are obtained, it is well worth the small increased cost for materials and labor. The uncertainty of the outcome of each dyeing by this method makes it seem to the writer as impractical to use.

The second question asks what are the brightest fast-to-light direct dyes for producing a nile green shade on cotton knit goods; and whether it is better to use a blue and yellow to produce a green, and if so, how to proceed to produce a level dyeing.

I have found that there are no bright fast-to-light direct self greens, which have the brightness of a sulphur color dyed the hydrosol method, or dyed with a vat color. I have found that a blue and yellow are not the best combinations to use to obtain the brightest shade for a nile green. A nile green can be produced by using these two colors, but I have found that the following two colors, dyed as per the recipe, gives a good clear, bright shade. One terry fabric I have in mind was so dyed, on 18s double carded which was dipped, and the gray goods were given a ¾-hour boil with 2 per cent of sodium perborate to give a clear bottom on the cloth. It was rinsed well and dyed as follows:

For 176 pounds of cloth, use 12 ounces Diphenyl Fast Green B, ¾-ounce Pontamine Fast Yellow NN, ¼ dipper (2 quart) tri-sodium-phosphate and ½ dipper Texto. Start bath cold, bring to boil, and boil from ¾ to 1 hour depending upon how color is exhausting. Take sample at end of ¾-hour. After shade is obtained, rinse well, soften if you are so accustomed, extract and dry.

CONTRIBUTOR No. 6409

EDITOR COTTON:

Is it practical to dye knit fabrics containing cotton and acetate with developed dyes, leaving the acetate yarn white—was asked recently in your columns by "CONTRIBUTOR No. 6404".

It is ordinarily not entirely practicable to dye mixtures of cotton and acetate with diazo or developing dyes when the acetate is to be left white. Most developing dyes tend to stain the acetate even when beta napthol is used as the developer, and even more when other types of developer are used.

On certain types of work, treatment with hot acetic acid will clear the acetate after developing. Best results on this type of work are obtained with good direct colors which are fast to washing. Results can be improved by the addition, directly to the dye bath, of one per cent of sodium perborate on the weight of the goods. In my experience I have found that Indeclear, a specially prepared product, also produces a similar buffered bleached effect on the acetate and assists in maintaining a proper degree of clarity and whiteness.

Treatment with hot soap solution after dyeing should be carried out, since this helps remove surplus color and thus maintains a purer white. After soaping, rinse well and treat with two per cent of acetic acid and two per cent of formaldehyde at 120 degrees

Experience

WHAT a satisfaction and economy it is to be able to buy without doubt or hesitation, knowing that you will receive a quality product, efficient service and full value for the money you spend.

You have that assurance when dealing with Boger & Crawford who have had twenty-seven years experience in the spinning and mercerizing of fine cotton yarns.

Long experience is not only enjoyed by the management, but by practically every employee of this company whose average length of service is more than ten years.

With earnest effort backed up by long years of experience you are assured of a quality product in "B & C" yarns.

BOGER & CRAWFORD

Philadelphia

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F., for one-half hour; rinse well and soften as required.

This man also asks for opinions as to the brightest fast-to-light direct dye for producing a nile green shade on cotton knit goods. In order to obtain a bright nile green shade on cotton knit goods, they should first be given a half-bleach using sodium peroxide, followed by a thorough rinsing. I have found that the use of Diphenyl Brilliant Yellow 8G and Diphenyl Brilliant Green B, with the addition of sulphonated castor oil and soap in order to make it possible to obtain a level dyeing is good practice; the colors mentioned, I have found, produce a satisfactory shade, fast-to-light, level in application, and reasonably fast to washing.

He also asks whether it is practicable to use a blue and yellow to produce a green. It is not advisable to attempt to produce the nile green shade by the use of blue and yellow dyes. This combination is difficult to control, since the blue has a tendency to dry with a reddish tint. It can be done, however, I have found, with careful control, by the use of Diphenyl Brilliant Yellow 8G and Diphenyl Fast Blue 4GL. In this case, however, it is important that the goods be thoroughly steamed after drying in order to develop the proper shade.

CONTRIBUTOR NO. 6403

Methods of Disposing of Imperfect Top on Infants' Fancy Top Goods

EDITOR COTTON:

I was very much interested in the question from "CONTRIBUTOR NO. 6412", on page 115 of your September issue, asking in substance how to dispose of imperfect tops in making infants' fancy top goods. The question covers a great deal of territory and many conflicting problems enter into it. Much will depend on just what kind of merchandise is being made; for example, some mills make strictly infants' sizes running from 3½ to 6½, others go to size 8½ and some up to 10½—the combined ranges of course cover infants', children's and misses' sizes. Then there are mills who produce nothing but anklets in either all ingrain, or all dip dyed or some of each in a complete range of sizes. Some mills make anklets, half sox, and ⅝ lengths, all with fancy tops, and still call themselves an infants' mill.

The bulk of our production is anklets, sizes 4 to 10, which run about 70 per cent ingrain and 30 per cent dip dyed. We make all mercerized numbers, some rayon plaited tops, and some straight rayon tops, all with wrapped design. Like "CONTRIBUTOR NO. 6412", we have imperfect tops to dispose of, and I will attempt to outline briefly for your contributor just what we did and how we went about it.

First of all, we know that our manufacturing cost and overhead must include all imperfect tops, so, theoretically speaking, the customer who buys our merchandise is paying for these imperfect tops, then why not simply dump them into the waste box and thus solve the problem easily and quickly. Common every day horse sense teaches us that imperfect tops are worth something, so why not dispose of them at a profit even though it be a small profit ? It is obvious that "CONTRIBUTOR NO. 6412" had this thought in mind when he asked the question. So we turn our thoughts into two channels and ask ourselves honestly, are we making too many bad tops and how can we turn those which we are bound to make into a small profit?

Our first move was to make a running test on a full week's run, saving all imperfect tops and waste to determine whether we were making more bad tops than we allowed for in our cost figures. We were pleased to find that we were under the allowance by one per cent. We were forced to admit, however, that the amount of imperfect tops caused by wrap yarns missing was out of proportion to those from other imperfections. This was caused mainly by our machine operators allowing machines to run with empty wrap bobbins. To overcome this, we hired an intelligent boy for each shift to act as an inspector, his job is to wind the wrap yarns and keep each machine fully supplied. Each boy reduced the number of bad tops more than sufficiently to pay his wages. We also discovered that many of our tops went into imperfects because one wrap yarn missing would spoil the general effect of the design. By making a few slight changes we found that we could pass a great number of tops with one or two wraps missing for good work, thus making it possible to dispose of imperfect tops at a profit. We now make a running test on all new designs to be sure they will run successfully before we place them in the line.

We make both sewed-on and transferred numbers. All imperfect tops which will not pass for good work in transferred numbers are saved and these are used for the sewed-on numbers which are in the lower priced brackets. The feet for these tops are made on machines which are running on plain and stripe top numbers. When we have enough imperfect tops for a small run we make enough feet to cover and sew on the slightly imperfect wrapped tops in place of plain or striped tops. These numbers bring a slightly better price than the plain or striped top numbers.

All imperfect wrapped tops which will not pass for the line mentioned are used to sew on thirds. The feet for these thirds we get out of the imperfects from our string work machines. On these numbers we sew on the tops, sew up small holes in the feet, and sew the toes instead of looping. The profit on such goods is naturally small, but even a small profit is far better than a loss. A careful check-up after making the changes just described revealed that we are making less imperfect tops and we have cut the number of tops going into the waste box in half.

We are told that when the meat packers kill a hog they use everything but the squeal; perhaps we can apply more of that principle to hosiery manufacturing. I trust that "CONTRIBUTOR NO. 6412" and other readers will find something of value in my remarks and that many of your readers will answer his question. Surely it should be interesting and helpful to swap ideas on a subject like this.

CONTRIBUTOR NO. 6414

In the making of full-fashioned stockings, the needles ought to pay for themselves—in finer qualities, greater speeds, more firsts, fewer seconds and a clearer, sheerer fabric. That we are America's largest producers of Spring-Beard Needles and that nearly all manufacturers of fine quality silk stockings are standardized on Royersford Needles is a tribute to profitable performance.

The prescription for better knitting

ROYERSFORD NEEDLE WORKS, INC., ROYERSFORD, PENNSYLVANIA

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ROYERSFORD NEEDLES

RIBBERS--Article 4

Notes on Their Operation and Adjustment

(Editor's Note—This is the fourth of a series of articles discussing the operation and adjustment of the parts of rib machines. The first article in the series appeared on page 102 of the November issue, and the second article appeared on page 96 of the December issue and the third on page 99 of the January issue.)

EDITOR COTTON:

The Clearing Course Cam

The clearing course cam is also attached to a movable post, free up-and-down movement is essential. The object of the cam is of course to raise the cylinder needles high enough at a pre-determined time to cast the stitches off of the cylinder needles. If the lever adjustments are correct and the clearing course cam raises the needles too high, it is best to shorten the cam, since nothing is gained by raising the needles to an excessive height. Clearing course cams as supplied by the machine builders are sufficiently long to allow for correct fitting. In re-polishing clearing course cams be sure to remove sharp edges on the inner surfaces so as to prevent the cams from cutting into the needle butts. Clearing course cams will give a great deal of good service if they are fitted correctly and re-polished regularly.

The Press-off Cam

Immediately following the clearing course cam comes the press-off cam. This cam lowers the cylinder needles after they have been raised by the clearing course cam. Press-off cams require little attention other than keeping them tight and re-polishing them occasionally. New press-off cams as supplied by the machine builders are long enough to allow for normal fitting to individual machines. The press-off cam should draw the cylinder needles down far enough to keep the top of the cylinder needle hooks slightly lower than level with the top of the cylinder. Drawing the cylinder needles too low at this point simply puts unnecessary strain on the stitches which often causes a distorted streaky cylinder stitch especially on fine gauge machines.

Welt Levers

All rib machines use a series of levers (sometimes called dogs) to supply the necessary motion for raising and lowering the various cam posts and operating numerous devices. These levers are attached to a stud which has a pinion on its lower end. The levers are actuated by the bob pin which in turn is raised and lowered by the pattern wheel mechanism permitting the bob pin to come in contact with the levers which are located at different heights in the cam ring. Most bob pins are encased in an eccentric sleeve or tube which permits moving the bob pin toward or away from the levers, thus increasing or decreasing the lever throw as desired. Frequently it will be found that the bob pin adjustment will be correct for some levers, yet insufficient movement will be gotten on others. In such cases it will be found that the pinions are not timed correctly or that certain levers are worn off more than others. Back in the old days, when levers became worn to a point where the bob pin adjustment would not give the necessary results, the levers had to be replaced. Modern welding torches have made it possible to rebuild not only worn welt levers but many other minor parts as well. If used intelligently, a good welding torch will save a great deal of time and labor and help to reduce parts replacement bills.

The Gear Ring

The gear ring is also supplied with a series of cams which are necessary to raise or control the cylinder needles after they have been lowered by the various cams in the cam ring. These cams with normal usage (barring accident) give remarkable service with very little attention. The raise cam is the most important of the lot an di identally it is more subject to wear than the others. It must also be remembered that raised cams have a direct relation to the latch opener, the yarn carrier and yarn changing devices when yarn changes are made on the cylinder needles. Special attention must be given to raise cams which are made to be used in connection with devices requiring long and short butt cylinder needles. These cams are usually called split cams by rib fixers since they raise all long butt needles fully up and permit the short butt to pass in front of the high portion of the raised cam. If you are being troubled with broken or bent needle butts, look for cracked, rough or loose gear ring cams. And if you have a machine torn down for any reason, check over the gear ring cams carefully. Today's check-up may prevent tomorrow's troubles.

And now for a few more words about gear rings. About the only attention they ever get is an occasional oiling and this often turns out to be nothing more or less than slobbering a liberal portion of oil on the gear ring and bed. Oil holes in many cases are plugged up or not used at all; it is really remarkable how much use and abuse a gear ring will endure before it begins to give you the devil in no uncertain terms. Brother Rib Fixer, did you ever stop to figure up how many revolutions the gear rings make in a day, week or month? If you have not, do so, and you too will wonder how they stand up as well as they do. Did you ever attend a prize fight and see one fighter take punishment for round after round; you knew it couldn't last long. So it is with the gear rings; they can't take punishment round after round indefinitely; Old Man Wear, the referee, will soon count them out.

Next let us ask ourselves this question: How many different kinds of trouble can a worn gear ring cause? While pondering that, remember that the cam ring assembly, cylinder, dial, dial cap, dial shaft, dogless device, yoke, yarn changing devices, and many others too numerous to mention, all have a direct or indirect relation to the gear ring. If you have never learned to say "Deliver me from evil", well, learn to say, "Deliver me from a line of ribbers with badly worn gear rings".

Did you ever have a ribber tighten up suddenly

THE WILDMAN SINGLE HEAD FULL-FASHIONED HOSIERY MACHINE

AT the new "quantity production" price YOU can now afford the new Wildman Full Fashioned Hosiery Machine. When ALL of its economies and advantages are considered you possibly can't afford to be without it.

WILDMAN MANUFACTURING CO.

Full Fashioned Division **Norristown, Pa.**

for just no reason at all—it simply refused to turn freely? Then after flooding the gear ring and bed with oil, tightening the belt and putting a liberal portion of belt dressing or even powdered rosin on the belt and pulleys, the fixer finally, after due consideration, much mental anguish and plenty of cussing, decides to tear down the machine. And to his great astonishment just what does he find—a few needle butts between the gear ring and the bed. No, I am not telling rib fixers bed-time stories, simply stating facts.

And, last but not least: how often do we re-set our gear ring clamps? Perhaps we have machines which do not have them, or if our machines do have them—check over any ten machines in an alley, and if you find five machines with the clamps in first-class shape —Three cheers for you! R. B. ORR

Overcoming The Problem of 3-Carrier Silk Drying Out On Footer

EDITOR COTTON:

I am writing to discuss the problem brought up on page 103 of December COTTON by "CONTRIBUTOR NO. 6428" with reference to 3-carrier silk drying out on the footer. He explained that while making the toe of the stocking and while taking off and putting on new set (on the footer) the three main ends are idle and that during this period, the part of the ends between the moistening troughs and carriers dries out to some extent, and that on the footer, the three complete courses made with these dry ends, results in a slight dry bar across the stocking at the instep.

He stated that in order to eliminate this condition he had his footers wet the needles with a brush before starting each set; also, that he used a solvent with the water to soften it and raise the pH; also that he tried running 3-carrier all through the toe in conjunction with the re-inforced yarn, cutting down the idle time of the yarn, which means that the ends would have a chance to dry out only while a set was being taken off and a new one put on.

I would say first that I feel he has given very careful consideration and application to his problem, and has gone a long ways toward correcting his trouble.

Judging by the conditions he reports, his knitting room is not a humidified knitting room. If this assumption is correct, then his problem is a far more difficult one than it would be if he were operating under proper humidity conditions, and it is possible that he may have to draw the three threads of silk through sufficient to eliminate the dry sections on each operation, especially so when the knitting room is excessively dry such as in the winter time while being heated.

I see no objection to wetting the needles on the footer before starting each set, and I think it is thoroughly possible for him to slightly saponify the water used with some type of emulsified oil which will entirely eliminate and prevent the problem of rust. I would also recommend that the transfer bars be thoroughly wet with the same solution in each operation just before placing them on the machine for transferring. This can be done very quickly and easily after the bars have been filled and while they are still stacked in the rack.

It would seem that the nearest and most satisfactory solution to the problem will be to run 3-carrier all through the toe just as he states he has tried. In doing this he probably found it difficult to introduce the fourth carrier to make the desired heavy toe. This can be brought about in a very satisfactory way by adjusting the travel of the fourth carrier so that it will operate two to three needles inside of the selvage on either side. This overcomes the problem of trying to stack four carriers on top of each other and makes it possible for the fourth carrier to introduce the heavy splicing yarn as required. This of course makes a thin selvage, which is taken up in the back seam and is not noticeable after the stocking is seamed, and tends to improve the seaming operation, at the same time giving all the effect of a heavy re-inforced toe.

In closing, I do not think it amiss to add that a proper humidifying system in the knitting room comes nearer being a remedy for all of these problems than anything else I know. CONTRIBUTOR NO. 6429

EDITOR COTTON:

I note the inquiry of "CONTRIBUTOR NO. 6428", based on his problem of the slight dry bar across the stocking at the instep, in using 3-carrier attachments on full-fashioned, due to the fact that while making the toe of the stocking and while taking off and putting on a new set on the footer, the three main ends are idle.

This is a problem common to all makers of 3-carrier hosiery. The method of wetting the leg at the transfer line to prevent the dry lines at the instep, as he mentioned he had done, is generally used. However, we prefer wetting the topper line on the transfer bars rather than on the needles after transferring. We provide each topper with a pint cup and a small paint brush. We use our regular backwinding solution containing soluble oils which cause the fabric to absorb the moisture more quickly and the oils prevent rust.

When the topper fills her last bar, and while the bars are still on the rack, the topper applies the solution with a brush. The short delay before dropping the bars gives the fabric time to absorb all of the surplus moisture and prevents any liquid running down the needles.

The idea of keeping all of the threads in work through the toe to prevent drying out is good practice. We have no difficulty in getting the toe heavy enough, as mentioned by "CONTRIBUTOR NO. 6428." All of our footers have 6 carriers and we use only 5 of them on the cotton plaited foot. We run the three main carriers and one of the sole splicing carriers in the toe up to the ring toe where we throw in the other sole splicing to make the ring toe.

On our all-silk number we throw out the two-sole splicing carriers at the toe and put in the sixth carrier for heavy reinforcing in the toe up to the ring toe, and throw in one of the sole splicing carriers for extra re-inforcing in the ring toe.

By following up the sizing closely and seeing that the topper line is wet properly we have less trouble with transfer lines on the instep on 3-carrier construction than we used to have on the old single-carrier method. CONTRIBUTOR NO. 6430

Cooper, Wells & Co. INSISTS ON STRENGTH FOR WEAR

DIXIE Durene SUPPLIES IT

Below is information that shows how Dixie durene is used to help make Iron Clad Hosiery practical and salable. As you read, remember that, in addition to furnishing wear-giving strength, this control-manufactured yarn adds comfort because it is absorbent; and more . . . its smooth uniformity helps reduce seconds and production delays.

The Cooper, Wells and Company method of using Dixie durene in the three styles pictured is as follows:

Style 581, at the top, is a Jacquard all-over pattern reinforced with Dixie durene 50/2 in the heel and toe, and 32/2 in the ribbed top.

Style 587, center, has Dixie durene 60/2 at the heel and toe and 32/2 in the ribbed top.

Style 588, bottom, has Dixie durene 60/2 in the heel and toe, and it too has 32/2 in the ribbed top.

Additional Iron Clad styles use Dixie durene in other combinations. Cooper, Wells and Company's experience is positive proof that you will find assistance for both your merchandise quality and your productive efficiency in Dixie durene. Let Dixie's representative arrange for samples that will show you the best combinations for your needs.

Dixie

MERCERIZING CO.

CHATTANOOGA, TENNESSEE

Dixie Durene . . . A Product of Controlled Manufacture

THE KNIT GOODS MARKETS . .

Philadelphia, Pa., January 16, 1936.

WITH raw silk stabilized over the last month and the usual falling off in demand for full-fashioned hosiery after manufacturers had filled the requirements of the holiday trade, there has been little change in goods prices over this period. Manufacturers have been slow in naming prices on their spring lines by several weeks and when these finally appeared the advances have been extremely modest and in some instances, no changes have been made.

There are definite indications that some manufacturers over-estimated demand for their goods during the latter part of November and December with its resultant accumulation of stocks which, as is always the case, result in keener competition and in many instances the inability of manufacturers to merchandise their product at a profitable level. New price lists for the spring season issued by prominent manufacturers of branded hosiery, such as Kayser and Van Raalte, show only moderate advances. The cheapest number, for exmple, of the former, which has been selling all fall at $6.35 a dozen, being offered for spring at $6.50, which maintains the resale price of 85 cents. The advances in the new Van Raalte list concern only three numbers, which are up but 10 cents a dozen, making the new prices on these numbers $8.10 a dozen instead of $8.00 and maintaining the old resale price at retail of $1.15 a pair.

Higher Prices for Spring

The retail buyer probably will be favorably impressed with the moderation shown by the manufacturers in naming new prices for the first part of this year. Up to a month ago, the sentiment was that the coming spring season would show a considerable lifting of prices, in view of the fact that all during the boom in raw silk, the manufacturers of branded lines had striven to keep prices down so that consumer demand would not be checked. The year recently closed was much more successful in volume at least for the manufacturers of these branded lines, Julius Kayser & Co. reporting a remarkable gain amounting to 43 per cent for the fall season alone, while the Van Raalte Co. reports that its business in 1935 was 40 per cent larger than that of 1934. The Kayser price list became effective January 1.

In announcing slightly higher prices for the spring lines hosiery manufacturers pointed out that the substantial rise in the cost of raw materials since their fall prices were made distinctly warrants higher prices for spring. In addition, the new Social Security Act, eftective January 1, 1936, putting a substantial state and national tax on pay rolls, further increases the cost of all manufactured goods. Manufacturers asserted that whatever changes they had made in their spring lists were moderate and indicated they had given every indication to the need for proper retail mark-up as well as for a desirable line of merchandise in the important and popular price brackets.

Prices of the Berkshire Knitting Mills for spring showed little change from the late fall list. Up to the middle of December the industry had been expecting to see Berkshire quote its 4-thread 42-gauge ringless style at $6.25. This number came out at $6.00, the price at which many other mills selling to the wholesale trade were already quoting. There is no question in the opinion of many in the trade that the prices of the largest factor in the industry would have been higher if raw silk had remained closer to its October peak. It will be recalled that on October 21 raw silk touched a peak of $2.40, which was $1.10 above the 1935 low point of March 12 and compares with $1.90 at the time of writing.

Distributors of the large company were pleased that advances were held to a minimum as the Berkshire has frequently been the target of sharpshooters whose ambition is to undersell the Reading mill by a few cents. Considering that $6.00 is a moderate price for the better quality of ringless high twist hosiery it is believed that other mills may be less enthusiastic about cutting during the new season. The Berkshire price list caused some surprise in that a conventional number, such as the company's 4-thread 42-gauge at $5.75 should be left in the line after many mills had gone over to ringless exclusively. Distributors justify its retention, however, on grounds that bargain prices are still heard in the market and they say the mill employs good judgment in continuing this number to offset that influence.

Berkshire devoted considerable attention to crepe twists in its new lines, which last fall accounted for a substantial portion of business. Its prices on these numbers were regarded as more moderate than might ordinarily be expected of a house that had so closely identified itself with a number of this nature. Many in the trade believe that the emphasis on crepe goods by this company will provide it with the chief source of profit for the spring season. It is interesting to note that the big company includes in its list a 100-denier Bemberg 42-gauge number with lisle welt and foot and with Bemberg plaited heel listed at $4.75.

Rayon Full-Fashioned

Since the advance in raw silk, there has been considerable discussion and some experimentation in the production of rayon full-fashioned hosiery. A number of mills are producing goods of this type, both in this section and in the South, and have been doing so for a couple of years. Although real silk is higher, there has been no large expansion in the use of rayon for full-fashioned hosiery during 1935. Rayon yarn producers have done considerable research in order to produce a suitable yarn for the manufacture of full-fashioned hosiery and while admitting that they do not have a perfect yarn yet, assert that much of the blame for poor-wearing rayon full-fashioned can be attributed to inferior manufacturing rather than to the yarn.

In other words, they claim that many manufacturers in experimenting with rayon full-fashioned use their old and obsolete equipment whereas yarn producers claim that if they use the same machinery on which they are making their better grade silk, a satisfactory hose would be produced. With silk at its present level, few in the industry look for any rapid expansion in the production of rayon full-fashioned hosiery during 1936.

The Artcraft Silk Hosiery Mills, Inc., also announced that there would be no immediate price advance in its spring line. Present prices will be maintained this company stated, as long as raw silk remains at approximately its current level and retailers support the policy with increased volume. The company said it was confident that 1936 will mark the turning point for many stores that after having passed through a profitless era of destructive price-cutting competition, will again realize the importance of stressing quality merchandise.

It pointed out also it was confronted with two main problems—the one that the increased cost of silk, plus other increased costs, seemingly made it impossible to maintain present prices—and on the other hand, it was reluctant to raise prices because of the possible harm it might do on the consuming end. After weighing the situation from every angle, this company decided to start off the new year with prices unchanged, with the promise that these prices would be maintained throughout the spring selling season if the policy resulted in an increase in volume.

Curtailment Program

The delay in pricing spring full-fashioned goods reflected sound judgment, according to a majority in the trade, in view of the uncertainty in the raw silk market. Manufacturers have been buying silk sparingly in recent weeks. The majority expect silk to settle slightly below $2.00 a pound for a month or two but some still continue to withhold orders altogether in the expectation of another decline during the present buying lull. The market based its new prices on $1.90 silk, which is generally considered a logical one at present. One of the most important reasons, however, that higher prices were not named on spring lines was the accumulation of stocks of goods at the year end by some mills. Many manufacturers had based their November and December production schedules on the scale of their October shipments, which were the heaviest of the year, but which were not continued through November and showed still further contraction during the last month of the year.

This question of curtailment by manufacturers received attention at a meeting of the Full-Fashioned Hosiery Asso-

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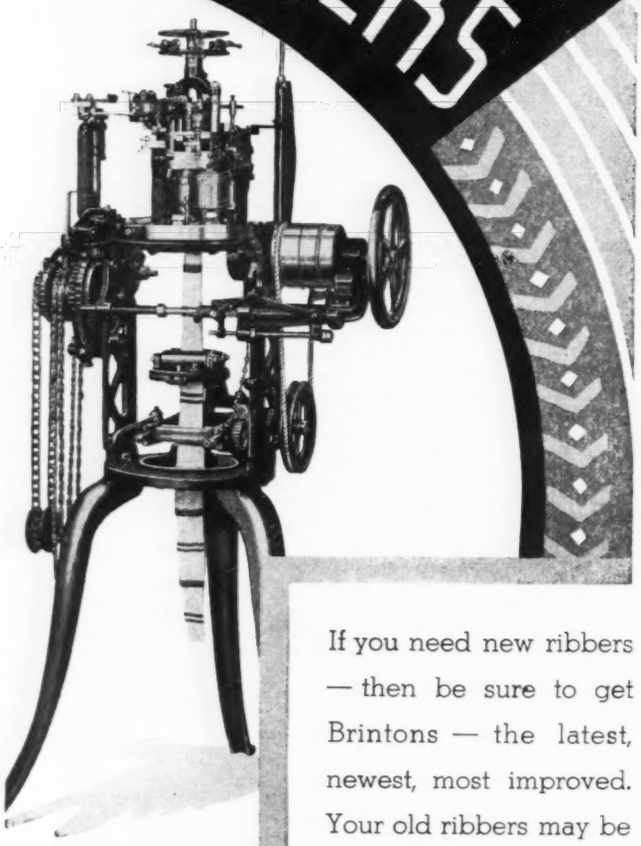

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ciation, Inc., at a meeting in Philadelphia, January 14, when a three-point program was adopted. This association, the largest in the industry, recommended that especially at this time manufacturers should not only curtail production, but should produce only against actual orders; in the second place, they recommended that standards of construction for hosiery be established at the earliest practical time and finally that wage scales throughout the full-fashioned industry should be made uniform. It is recognized that if manufacturers curtail production so that accumulated stocks are reduced early in the spring season, chances for manufacturers making a better profit will be considerably enhanced. In the matter of adopting standards of construction, it is felt by a large number of manufacturers of reputable type goods that if this is agreed upon, there will be much less hosiery sold at the current extremely low retail figures.

The new price list for next spring issued by Nolde & Horst, in general shows moderate advances in prices. In line with other large manufacturers, this concern made some reconstruction in numbers to keep prices within accepted resale figures. The list includes a 7-thread 42-gauge at $7.25 a dozen with mercerized top and plaited triple guard heel and toe.

Crepe Hosiery Attractive

The prospect for the development of sizable volume on crepe full-fashioned stockings is one of the most interesting possibilities of the hosiery business for 1936. Considerable progress has been made by important mills this year in building up increased sales on the high-twist hosiery generally classified as crepes, and indications are that they will occupy a much more important place in the hosiery picture for spring. Such a development, which would automatically increase the proportion of business done on quality goods, would be welcomed by manufacturers and retailers, giving them a better opportunity for larger mark-ups.

The term crepe is loosely applied to practically all stockings made of silk yarn, which is twisted higher than the usual tram, sometimes regardless of the type of twist. Several manufacturers assert that American mills could profitably absorb information on this score from certain manufacturers located in Canada, who have worked on high twists for years. It is also pointed out in this connection that there is a limit to which high twists can be imparted to silk yarn for hosiery from the standpoint of maximum wearing quality of the stocking. Researches made by throwsters have apparently demonstrated that the strength of a yarn increases with the amount of twist up to a certain number of turns per inch, the strength decreasing when the maximum is exceeded. Some manufacturers consider a balanced twist preferable for hosiery to a straight crepe twist. Manufacturers in general feel that there are big possibilities in high-twist stockings if they are properly made and merchandised, their snag-resist qualities beng emphasized.

The AAA Decision

Unless or until the hosiery manufacturer receives credits or adjustments from the spinner on processing taxes paid the latter under the AAA, no buyer of hosiery should expect to receive refunds from the manufacturer. This was the stand taken by the National Association of Hosiery Manufacturers, which advised its members to take no hasty action on the matter but stating it expected spinners of yarn as well as other original payers of the processing tax would immediately adjust their prices to reflect the lifting of the tax. The yarn bought by the manufacturer who paid no taxes will naturally involve no refund. As only a handful of hosiery manufacturers spin their own yarns, the association said their problems are special and would doubtless be disposed of under such policies as yarn manufacturers may agree upon.

Referring to its own tax clause and that of the spinners adopted last year, which promised to pass on to the buyer any and all refunds or credits on processing taxes, which either might in turn receive, the association had this to say: "Customers who press for adjustments should be advised that the hosiery manufacturer's policy and obligation to act are governed both by what policy the government may pursue and why the performances of the sources of yarn."

Going into more detail, the association's notice stated that the probability of recovering processing taxes paid to the government prior to the injunctions is remote and probably unrealizable. It is a general maxim, the statement adds, that the government may not be sued without its consent and that it may impose such conditions as it sees fit as a condition precedent to permitting any suit against itself. Claims against the government for recovery of taxes paid on floor stocks, references to which are made in both the spinners' and hosiery manufacturers' clauses, if made possible, must wait for official legislative and executive action. In both clauses the obligation of seller to buyer is contingent upon whether or not the buyer can make recovery from the government direct.

"Ringless" Suit Postponed to May 18

PHILADELPHIA, PA.—Trial of the "ringless hosiery" patent infringement suit by Julius Kayser & Co. and the Textile Patents Corp. against the Rosedale Knitting Co. of Reading, Pa., which was to have commenced here January 16 in the Federal District Court, has been postponed until the week of May 18. It was explained that the attorneys for the litigants are engaged in a drawn-out law suit in Brooklyn and would not be available here for the present. Former United States Circuit Court of Appeals Judge Thomas G. Haight, one of the attorneys for Rosedale and former Federal District Judge Hugh M. Morris of Wilmington of counsel for the complainants are on opposing sides in the Brooklyn law suit and there are other lawyers representing litigants who are also pressed by other engagements. The postponement will necessarily further delay ultimate trial of the counter-suit by Rosedale against the Kayser and Textile companies.

Hosiery Statistics

Shipments of hosiery in the first eleven months of 1935 were eight per cent of the same period of the previous year, while November shipments ten per cent ahead of the corresponding 1934 month, according to the National Association of Hosiery Manufacturers. Stocks of full-fashioned goods were reduced by curtailment, despite the fact that shipments also declined slightly from October through November. Production of all types was nine per cent above November of last year but under October. Significant in the data is the fact that shipments of women's full-fashioned goods in the first eleven months of 1935 were greater than during the entire year of 1934, totalling 31,576,941 dozen pairs. Production of the same was reduced in November by 22 per cent from October, thereby placing this branch of the industry in a healthier condition.

As compared with October, production in November was curtailed for practically every type of hosiery and where gains were reported, they were small. In all cases except that of anklets where a seasonal gain in stocks is to be expected, manufacturers' supplies were reduced. In men's half-hose, women's seamless goods, children's goods, woolen and ribbed goods, and cotton bundle goods, November production approximated or was lower than shipments and the position of stocks as compared with a year ago, shows improvement. On the other hand stocks of anklets reached a new all-time peak. Shipments of silk goods, woolen goods and those classes of children's goods not made of ribbed material, for the first eleven months of 1935 exceeded shipments for the entire year 1934.

Imports of cotton hosiery continued to rise during November, totalling 110,817 dozen valued at $52,381.00. The National Association of Hosiery Manufacturers points out in this connection that November figures make up the largest single month's receipts for the past three years. For November, 1934, the imports amounted to 30,004 dozen valued at $31,792.00. Cumulative imports for the year 1935 through November amounted to 649,610 dozen pairs valued at $439,588.00. This is well in excess of total imports of cotton hosiery for either of the two years immediately preceding.

As has been the case for the past several months, the bulk of our November imports came from Japan. We bought from that country during November a total of 107,693 dozen pairs with a Japanese value of $38,355. Our total receipts from Japan during the eleven months was 551,543 dozen pairs valued at $194,552. It was found that the average value of our Japanese imports was 35 cents per dozen compared with slightly over $3.00 for imports from other sources. This is accounted for by the fact that

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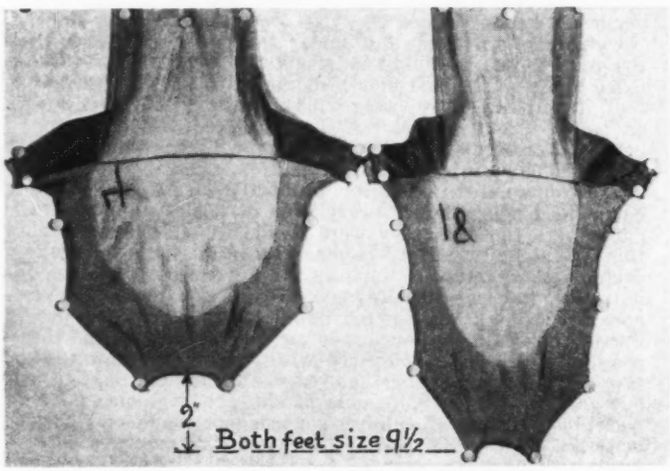

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most of our cotton imports other than those from Japan are of fine lisles coming largely from France, United Kingdom, Italy and Germany. It must also be borne in mind that these values are the declared valuations in the country of origin and that import duties and other charges are added before these stockings come on the American market.

The Underwear Situation

The underwear market, where large amounts of cotton are used, was confused as a result of the AAA decision and the elimination of the processing taxes. At this time many manufacturers informed their selling offices that they were closing down immediately to take stock and would ship out no further orders for the time being. In some ways, the decision came at the best time of the year for the underwear trade. The heavy-weight business of the current season is over and manufacturers have been meeting recently to prepare for the fall season of 1936.

Stocks of heavy underwear, both in the hands of mills and jobbers as well as retailers are believed to be lower than for some time. The light-weight business for next season has been largely booked and while some mills have stocks of this merchandise made up against orders the actual shipments to date have been small. Furthermore, the coming season concerns underwear with such a small cotton content that the tax charge has been comparatively light. Of course, the next spring underwear has been sold with a clause drawn up by the manufacturers through the Underwear Institute.

This clause has been used on all underwear orders and reads in part as follows: "If and when the sellers' cost is increased or decreased because the liability of sellers' sources of supply for processing taxes levied under the Agricultural Adjustment Act as heretofore and hereafter amended is increased, decreased, or terminated, or because all such taxes heretofore and hereafter levied are invalidated by final decision of the Supreme Court of the United States, prices on an invoiced portion of this order are subject to adjustment to the extent that sellers' cost is so increased or decreased, but not to exceed an adjustment at a rate computed on the basis of the conversion factors set up by Treasury Decision 4422 approved May 10, 1934."

In addition the seller will credit on the buyer's account an amount computed on the basis of such conversion factors, equivalent to any such tax which by reason of such invalidity shall have been refunded to the seller or the seller shall have been relieved from paying with respect to any delivered portion of this order; provided that the buyer shall only be entitled to such credit with respect to delivered portion of this order, held as floor stocks, as to which direct refunds from the Government are not recoverable by the buyer after claims therefore have been duly and properly prepared and presented in accordance with law. The seller shall be entitled to deduct on a pro rata basis the reasonble expense of procuring any refund or relief with respect to such taxes.

On the basis of this order the conclusion is that there will in due time be lower prices on spring merchandise made by mills on such spring orders at least that have not already been shipped. As the quantity of spring orders already shipped is small, the expectation is that in due course there will be a considerable readjustment of the important items of spring underwear made of cotton.

The understanding is that the processing tax has meant a charge of about 10 cents to 15 cents a dozen on knit athletic shirts, varying of course, with the weight. On the woven shorts of good quality, the extra cost of the tax has meant about 10 cents to 12½ cents a dozen. On woven suits, such as nainsooks, the extra charge of the tax has meant about 25 cents a dozen to mills, while on heavier summer knit garments, such as men's knit ribbed suits, the charge has in some instances reached as much as 35 cents a dozen.

On heavy men's cotton underwear for fall and winter the extra cost of the processing tax has reached as much as 75 cents a dozen on the 14-pound union suits with about 65 cents a dozen for the 12-pound suits. The impression is that buyers for the most part realize the situation confronting manufacturers in connection with processing tax refunds and will be willing to leave the settlement to the manufacturers with the feeling that the solution will be handled with the best interests of all concerned taken into account.

Underwear buyers and particularly those connected with the mail order houses have been concerned to have this matter of prices adjusted at the earliest possible moment in view of the demands facing them in getting out new catalogs. Buyers in general also would like to see the whole matter settled as soon as manufacturers can do so. There is no question but that the unsettled state of the market following this decision is holding back business that gives appearance of being at hand once prices are settled.

The Underwear Institute suggested a course of action in view of the annulling of the AAA. Members were cautioned to take no precipitate action in the circumstances but rather to wait for a meeting to be held by the executive committee. In the meantime, it advised underwear manufacturers to make no concessions to customers with regard to prices or in any other respect until the smoke has cleared away and the exact meaning of the decision is more definitely made. It said: "Only by the most faithful co-operation and by sticking together until we can base our policy on a full knowledge of the facts and circumstances can we avoid the likelihood of a tremendous loss of money and a great deal of confusion with our customers."

An indication of how buyers feel in this matter was indicated when Montgomery Ward & Co. communicated with selling offices of certain underwear mills, with which they had placed orders for spring merchandise. The company asked what changes in prices were to be made under the new situation resulting from the annulment of the processing tax. This mail order house naturally needed this information for use in its new spring catalog. The information was requested as soon as possible in view of the fact their catalog was held up awaiting the new figures. Their letter concluded with the following paragraph; "Of course, we could figure the processing tax on the various items based on their weight but we feel that we prefer having you submit new prices to us."

Production and shipments of knitted underwear during October were higher than in September and October 1934, while stocks at the end of the month were lower than the preceding month and the same month a year ago, according to the Department of Commerce.

Mills produced 1,618,655 dozen garments during October, compared with 1,370,837 dozen in September and 1,275,611 dozen in October, 1934. Shipments were 1,971,252 dozen, against 1,880,135 dozen in the preceding month and 1,486,022 dozen a year ago. Stocks were reduced from 2,462,104 at the end of September to 2,109,507 dozen at the end of October. At the end of October, 1934, stocks were 2,546,244 dozen garments.

Underwear production other than glove silk and rayon during November totalled 1,389,755 dozen garments compared with 1,142,077 dozen garments in the same month in 1934. Shipments during the month totalled 1,404,465 dozen garments; stocks on hand at the end of the month 2,109,498 dozen garments; orders on hand at the end of the month, 2,535,059 dozen garments; new orders received during the month, 1,962,320 dozen garments. Production of rayon knitted underwear from purchased fabric during November totalled 391,447 dozen garments.

The Underwear Institute in a review of business in 1935 pointed out that for the five months since the end of NRA, underwear production has increased 2.6 per cent over the same period of 1934, when the Recovry Act was in effect. It stated that 1935 was a fairly satisfactory year from the standpoint of volume of production and sales but one in which the level of prices left considerable improvement to be desired.

Latest statistics indicate that production for 1935 will exceed that for 1934 by between 1½ and 2 per cent despite the slump which developed during the first half of the year. In the first five months of 1935 under NRA production had dropped 2.4 per cent under that for the same period of 1934. In the next five months subsequent to the demise of NRA, underwear production recorded a 3.6 per cent increase over the 1934 period under NRA. Stocks of all types of underwear at the close of the year totalled 15 per cent less than a year ago with individual decreases as follows: Cotton-wool 17 per cent, silk and rayon 6 per cent, and woven cotton 18 per cent.

Textile School Equipment

The Textile School of North Carolina State College, Raleigh, N. C., has installed a single tube new type Smith, Drum & Company skein dyeing machine, to be operated by student to dye yarns which they us in weaving a variety of of intricate and fancy fabrics, as part of the work required in weaving and designing. A Suter rayon and cotton twist counter has been added to the testing laboratory equipment of the school; and a yarn printing machine has also been added to the dyehouse equipment.

REVIEW OF THE YARN MARKET

Philadelphia, Pa., January 16, 1936.

ONE of the most important developments in the cotton yarn market in more than a year occurred on January 6, when the Supreme Court declared the Agricultural Adjustment Act unconstitutional. This decision meant that processing taxes which had been included in yarn quotations since this act went into effect would have to be eliminated. This tax amounted to almost five cents in the case of carded and more than five cents in the case of combed yarn.

New prices which have been named by spinners and selling agents following this important decision do not reflect the elimination of the full amount of this tax and sellers explain this by saying that their quotations prior to January 6 did not include the full amount of the tax due to competitive conditions in the sales yarn market. In view of this, most spinners in both carded and combed qualities announced new prices on January 14 which were approximately 2½ cents lower than they were prior to the decision.

Mercerizers, however, in re-opening their market after a 10-day shut-down because of this decision, named new prices which were 4 cents lower than the previous list. These qualities were quoted in the new list on the basis of 68 cents for 60s two-ply compared with 72 cents formerly asked. This reduction in mercerized brings the price of such yarns down to the level at which a record-breaking poundage was sold in 1935. These yarns were advanced in price last fall but there has been comparatively little new business booked since the 68-cent mark was passed.

This feeling that lower yarn prices will expand business in cotton yarns during 1936 is universally held in the market. Last year many spinners in both the carded and combed sections did the largest volume of business in several years, several in the combed qualities asserting that their 1935 volume was the largest in eight years. They believe that the elimination of the processing taxes will have a tonic effect, not only because of the price appeal but because of the removal of great uncertainty that has prevailed in the market since the AAA went into effect in 1933. Much contracting by both weavers and knitters has been delayed as far as possible because of this factor and with its elimination, allowing for a reasonable period during which the price list will seek a firm level, they look for an active spring market in carded, combed and mercerized.

During much of the time the AAA was in effect combed spinners and mercerizers carried on an energetic campaign to have a compensatory tax levied on rayon in order, as they explained, to equalize competition between the two fibers. This was never done by the Administration although combed spinners continued their campaign until recently. Now with the processing tax eliminated many such spinners and mercerizers believe that they will be able to compete on a fairer basis with rayon in such trades as seamless hosiery, infants' stocks and certain types of outerwear.

During the last month there has been little change in the raw material market, the price of spot cotton being little changed at present compared with December 16. Yarn prices were following a similar course until the AAA decision, remaining fairly steady, although new business during the last four weeks has not been large. With the AAA adjustment 20s two-ply were quoted at 33½ cents on December 16 and 30s two-ply at 37½ cents, with 10s single cones then held at 28½ to 29 cents; on January 14 when sellers began to quote again following the decision these counts were priced as follows: 20s two-ply 28½ cents; 30s two-ply 33½ cents; 10s single cones 25 to 25½ cents. Combed yarns were reduced in proportion but spinners that had been quoting extremely low prices before the decision, cut off smaller amounts than those that were on a higher basis previously. Combed knitting yarns were being quoted on the basis of 39 cents for 30s single following the decision.

Trading during the past month has been the least active for any similar period in a good many months. Part of this is due to seasonal factors and part to the disinclination of buyers to operate prior to the removal of the AAA uncertainty. As is usually true, buyers began to purchase less yarn about the middle of December in preparation for their usual year-end inventories, at which time they wish to have as little yarn as possible in stock. Although new business declined drastically in this period, shipments on running contracts continued good, and exceptionally so under usual year-end conditions.

This active specifying on old contracts was so persistent that some spinners in the habit of closing down for a week at the end of the year were unable to do so. This showed that although manufacturers were unwilling to buy new amounts, consumption was proceeding at a good pace and that when these two factors were removed trading would be resumed on an active scale and probably more so than the average for 1935.

Sales yarn spinners held a meeting January 13 at Charlotte, N. C., at which it was decided that spinners proceed to invoice yarn deliveries on unfilled contracts, which were in effect on January 6, the date of the Supreme Court's decision on the processing tax, deducting from such invoices the amount of the processing tax as computed by the Treasury Department, but stamping on each such invoice a clause which stated that the invoice had been adjusted by credits relative to the processing tax. Spinners agreed relative to new business that all such contracts should contain the following clause: "Prices on any undelivered portion of this contract are subject to increase or decrease by the amount that any Federal legislation affects sellers' costs."

Relative to refunds on yarn deliveries made between October 8 and January 5 inclusive pursuant to last summer's "Charlotte Clause" spinners asserted that uncertainties in the existing situation made it impossible for them to make immediate refunds although they intend to do so as soon as the situation is clarified.

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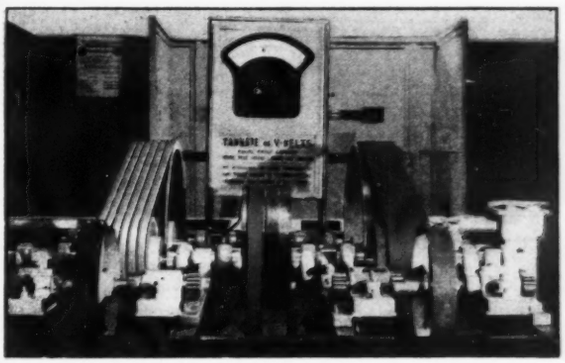
RHOADS TANNATE LEATHER BELTING



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In several Industrial Shows, we have exhibited the machine pictured in the above cut. The difference which it showed in favor of a Rhoads Tannate Flat Belt Drive as compared with a V-Belt Drive was clearly evident to the layman and could be checked by an engineer.

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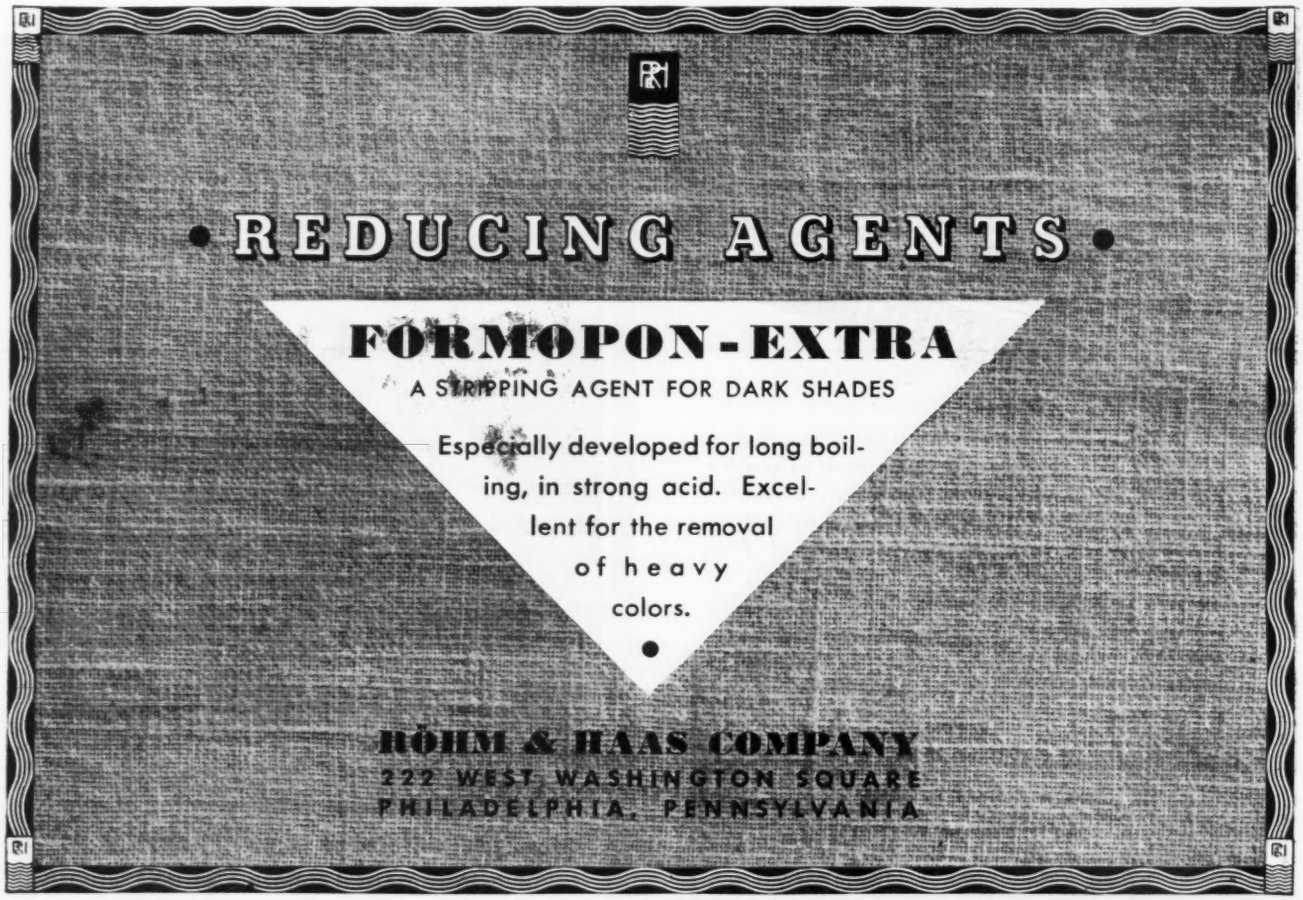
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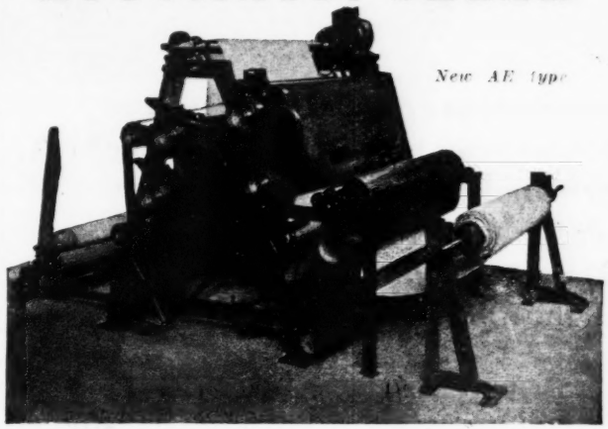

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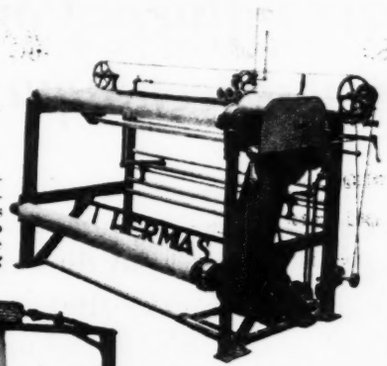

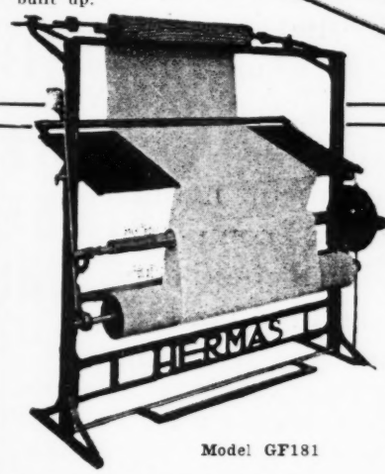

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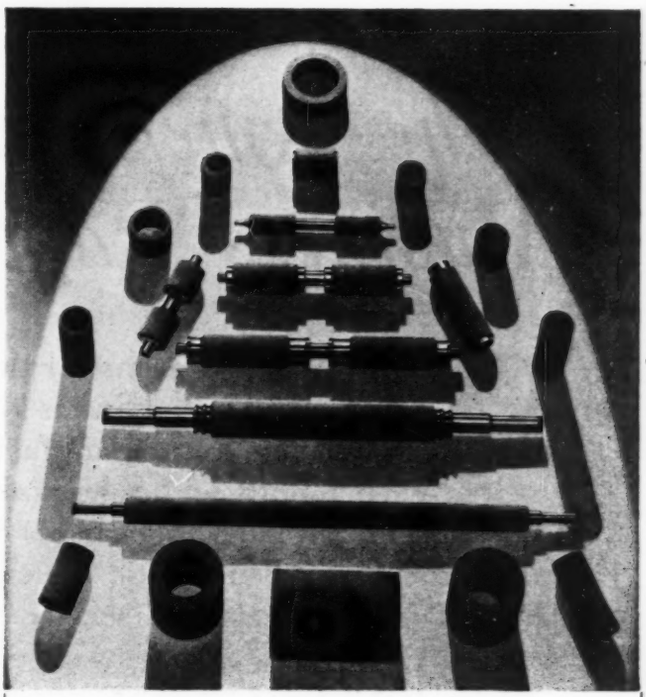

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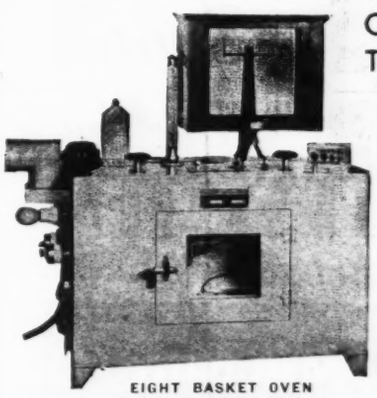

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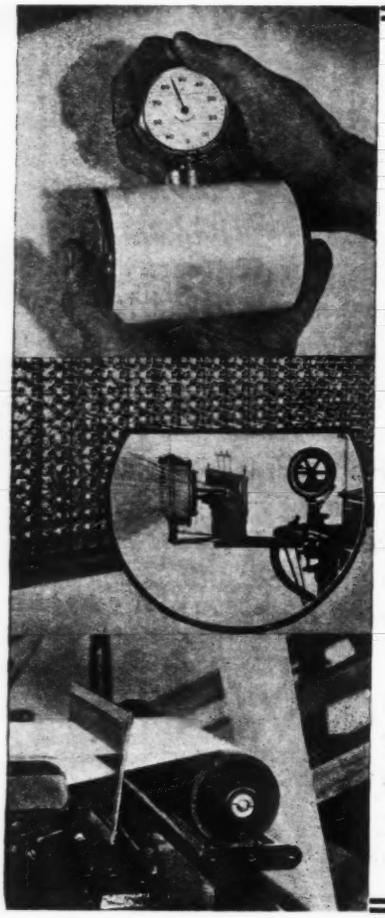

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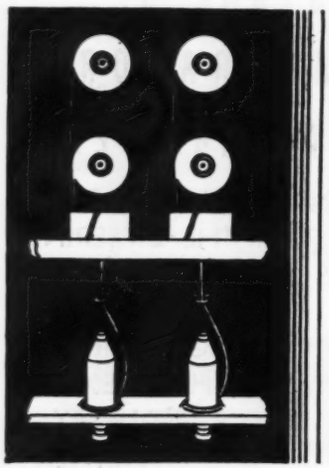

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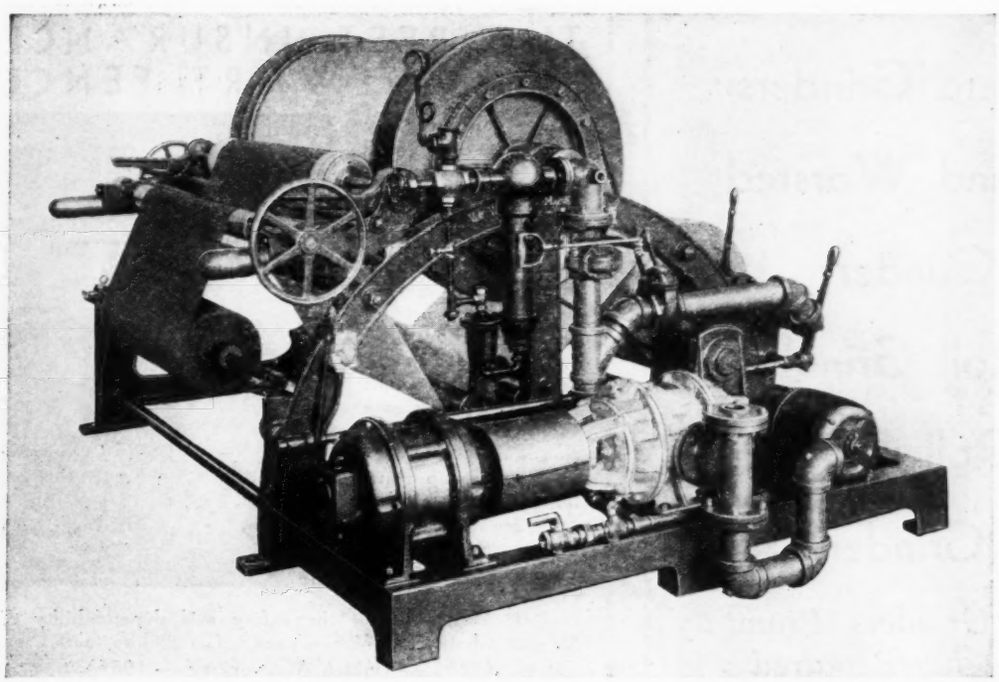

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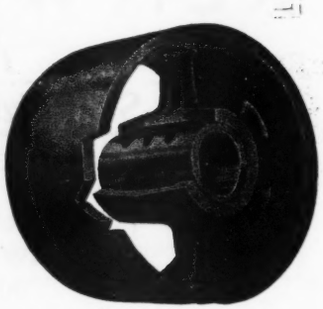

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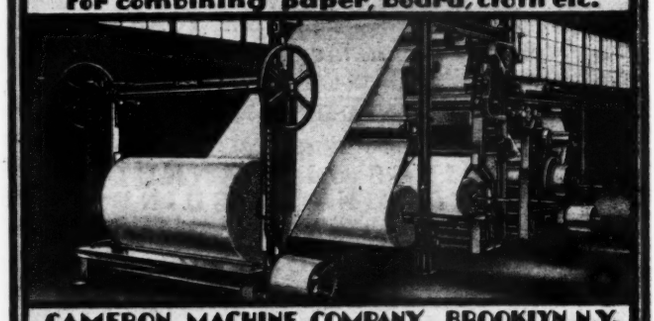

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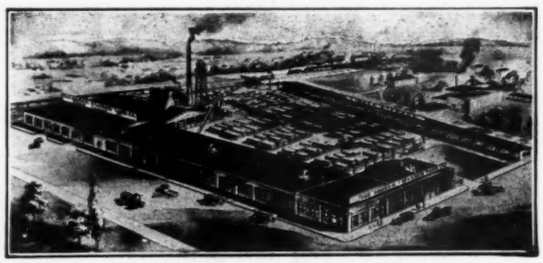

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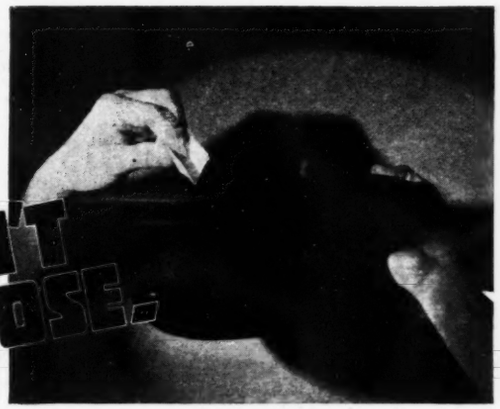
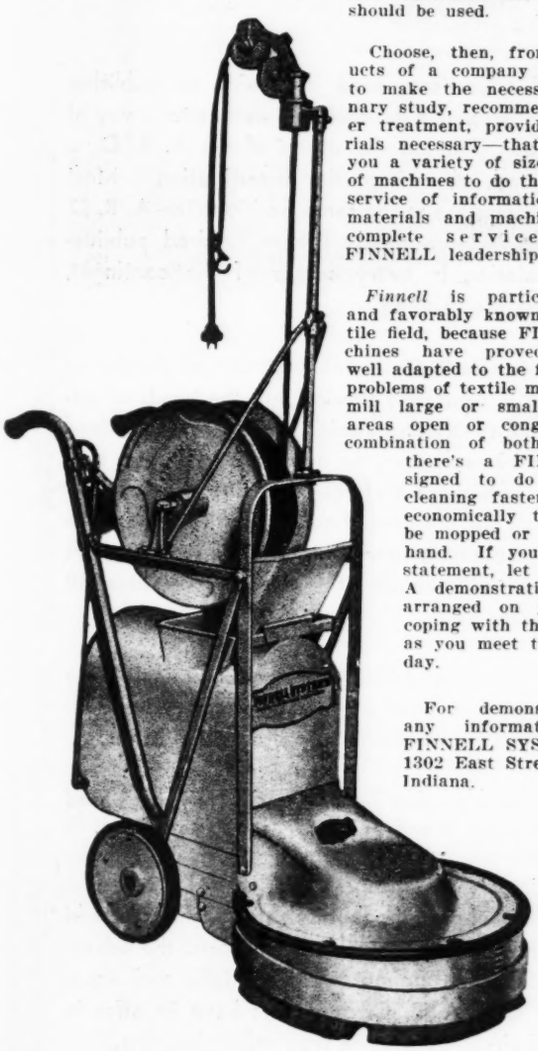


DON'T CHOOSE—

Until you know what you will get!

Selecting a floor machine, or a floor treatment, or a complete system of floor maintenance is too important to be done in a haphazard manner. Every floor presents a specific problem. Its size, its arrangement, type of material, age, previous care—and other factors—determine the method that should be used.



Choose, then, from the products of a company that is able to make the necessary preliminary study, recommend the proper treatment, provide the materials necessary—that also offers you a variety of sizes and types of machines to do the work. This service of information, methods, materials and machines — this complete service — explains FINNELL leadership.

Finnell is particularly well and favorably known in the textile field, because FINNELL machines have proved especially well adapted to the floor-cleaning problems of textile mills. Be your mill large or small, the floor areas open or congested, or a combination of both situations, there's a FINNELL designed to do your floor cleaning faster and more economically than it can be mopped or scrubbed by hand. If you doubt this statement, let us prove it A demonstration may be arranged on your floors, coping with the conditions as you meet them day by day.

For demonstration or any information, write FINNELL SYSTEM, INC., 1302 East Street, Elkhart, Indiana.

FINNELL

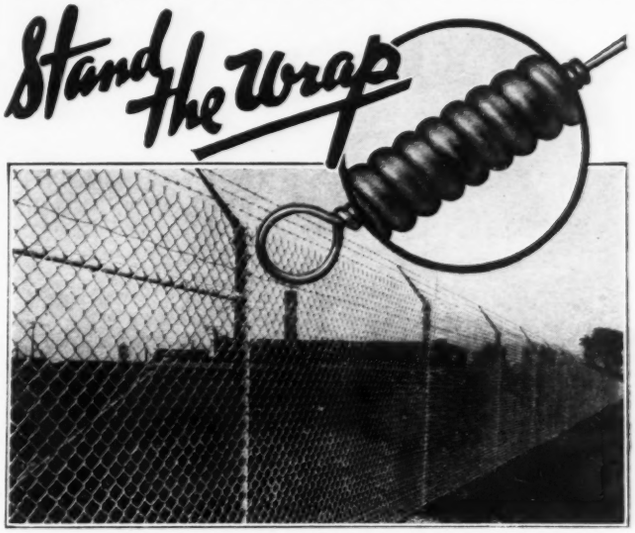
Est. 1906

ELECTRIC FLOOR SCRUBBER-POLISHER

AT LAST!

CHAIN LINK FENCE THAT CAN

Stand the Wrap



No weak spots for corrosion to attack — the BETHANIZED wire can be wrapped around its own diameter without breaking or flaking its corrosion-defying zinc coat.

HERE are the quick facts. Bethanized wire has a coating of chemically pure zinc—free from any vulnerable iron content. The coating is smooth and uniform—free from rough or thin spots. And the coating is extremely ductile—not hard and brittle. Twist the wire, bend it double, wrap it around itself—you just *can't* break the zinc coating and expose the steel core.

Think what that means. An Anchor Fence of Bethanized Wire is a fence with no flaws in its pure zinc armor—no cracks or crevices through which corrosion can creep in. Because Bethanized wire can *"stand the wrap,"* these Anchor Fences stand up for many extra years of service—even in industrial atmospheres that are heavy with soot, salt, sulphur and other corroding agents. And now there's no "premium"—no extra cost—for Bethanized wire.

Anchor Fences of Bethanized Wire—in types to suit every industrial requirement—are immediately available to you through sales and erecting offices located in every important industrial center in the South. Learn *why* the new Anchor Fences of BETHANIZED wire will outlast by many years any other chain link fence you can buy. Mail the coupon—and bring yourself up to date on chain link fence.

ANCHOR *Fences*

OF *BETHANIZED WIRE*

TODAY PLEASE

ANCHOR POST FENCE COMPANY
6625 Eastern Avenue, Baltimore, Maryland.

I will appreciate a copy of your free specification manual giving full details concerning ANCHOR FENCES OF BETHANIZED WIRE for Industrial Property.

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Address _____

THE MOST LOOKED-UP-TO ADDRESS IN ATLANTA

"at yo' service, suh!" ★

Here at the Biltmore, **your comfort is our creed.** From the moment the Bell Boy takes your bag, you instinctively sense a courteous service, which is combined with "homey" comfort.

You cannot help but enjoy your stay at the Biltmore, in one of its 600 bright, delightful, outside rooms—private bath of course—circulating ice water and all modern conveniences, with a special one-day laundry service at no extra cost.

The Biltmore is located just far enough away from Atlanta's business district to insure quiet—yet close enough in to be convenient to everywhere.

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★ "Considerate Service," Sir!

Atlanta

BILTMORE ★ HOTEL

"The South's Supreme Hotel"

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Publisher's Statements and Audit Reports

ADVERTISING has won for itself a place on this continent which it enjoys nowhere else and the advertiser and advertising agent and publisher members of the Audit Bureau of Circulations—and they comprise the dominating element in the advertising field of the United States and Canada—consider that this prosperity is based largely on the confidence fostered by this association.

National advertisers need deal with no publisher who fails to present a detailed and authentic survey of his circulation, bearing the stamp of the A. B. C., a stamp placed after impartial investigation. Most local advertisers are in the same position. The A. B. C. membership includes nearly fifteen hundred publications, circulating in every corner of the continent, north of the Rio Grande.

Through the A. B. C., a steady stream of circulation information is constantly flowing into the hands of advertisers and advertising agents. As of March 31 and September 30 each year, the newspaper members present sworn publisher's statements, giving their circulation statistics for the preceding six-month periods. The magazine, business paper and farm paper members present their semi-annual statements as of June 30 and December 31.

Seventy traveling auditors of the Bureau visit the publisher members once a year and examine the documentary evidence behind their circulation claims.

Audit reports present no opinions. They are based on documentary proof and are as accurate as it is humanly possible to make them.

With the semi-annual publisher's statements, checked and amplified by the annual audit reports, the advertiser can learn throughout the year fully and accurately just what A. B. C. publishers have to offer in the way of circulations when they solicit business.

COTTON

1020 Grant Bldg. Atlanta, Ga.

MODERNIZE
YOUR DICTATION METHODS TOO!

Ediphone Voice Writing Will increase your business capacity 20% to 50%!

IN a great many textile firms, Thomas A. Edison's modern dictating instrument—the Pro-technic Ediphone—is increasing business capacity. It does this by providing each dictator with a "24-hour secretary."

With Ediphone Voice Writing, there is no waiting for secretarial service . . . no wasteful duplication of effort. When letters are to be answered, market reports dispatched, telephone calls confirmed—dictators simply lift the receivers of their Pro-technic Ediphones and talk. Everyone thinks once . . . writes once . . . at once!

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Modernize *your* Dictation methods. Ediphones quickly pay for themselves . . . increase business capacity 20% to 50%. You pay nothing until they "deliver." *Get the proof!* Telephone the Ediphone, Your City, or mail coupon.

Thomas A Edison INCORPORATED ORANGE, N. J. U. S. A. Dept. C. I want the Proof!

Name .....

Address .....

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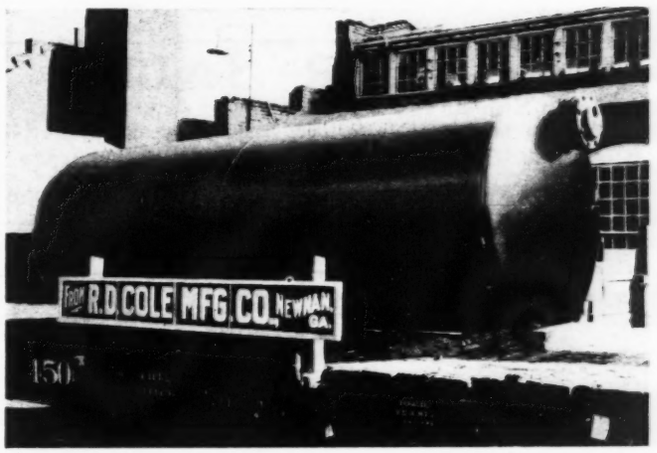
equipped with modern machinery and a staff of competent workmen, solicits, thru this publication, a trial order on your printing needs.

We have built a reputation that is known over the entire South by our special attention to the minutest detail.

We are more than ready to answer any question that relates to your printing problems.

Write us and let us quote you on anything from a postal card to a full bound book.

The A. J. Showalter Co.
PRINTERS AND PUBLISHERS
DALTON GEORGIA



Another Nickel-clad Job!

- This 2,000 gallon Hot Water Storage Tank, recently completed by us, is constructed of Nickel-Clad Steel Plate, welded throughout. All parts which come in contact with water are of genuine Nickel; the heating element is constructed of Nickel tubes. Tank is 60 inches in diameter.
- We are prepared to construct Nickel-Clad or Stainless vessels of any kind for any purpose—of your design or ours; Size Kettles, Starch Boxes, Jig Boxes, Peroxide Storage, Digestors, Vats, Etc. What do you need?

TANKS, TOWERS, BOILERS, KIERS, KETTLES
STAND PIPES, SMOKE STACKS, AIR RECEIVERS, Etc.

R.D.COLE MANUFACTURING CO.
NEWNAN EST. 1854 GEORGIA
FABRICATORS OF STEEL AND ALLOY STEEL PLATE

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UNIVERSAL WINDERS

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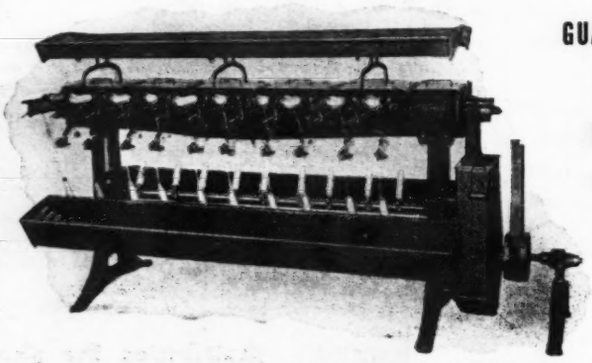

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—FOR COTTON OR WORSTED YARNS—

WRITE US FOR OUR COMPLETE LIST OF USED EQUIPMENT

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Wanted — a Product to Manufacture

One of our clients, a New England manufacturer with a sales organization contacting textile mills throughout the world, desires to manufacture and sell accessory of merit, preferably covered by strong patents, and applicable to existing looms or other textile machinery. Strictest confidence observed.

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Paul B. Eaton
PATENT LAWYER

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514 Munsey Bldg., Washington, D. C.
Former Member Examining Corps
U. S. Patent Office

FOR SALE:

100 used latch knitting machines, sizes 1" to 30", various cuts and gauges, especially suitable for beef bags. Guaranteed as represented.

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CENTRIFUGAL EXTRACTORS

Washing — Drying — Finishing Machinery. Rebuilt like new. All sizes and makes. Guaranteed. Sacrifice Prices.

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BETTER TEXTILE MACHINERY
GREATER SAVINGS

Specializing in Textile Machinery for relocation
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ENGINEERING
INSPECTING AND
APPRAISING

BETTER because of twenty years experience Building, Engineering and Selling with largest machinery builders; can select the Best.

SAVING your time and expenses by offering only best and buying direct from source.

GEORGE F. LANGEVIN **20-22 Howe Building, Lowell, Mass.**

WANTED

Knitting machinery mechanic, thoroughly experienced in all types of knitting machines. Write experience, reference and age. Box 154, c/o COTTON, Grant Bldg., Atlanta, Ga.

Wanted—Sales Representatives

Sales engineers, who sell power transmission equipment to textile mills, and who contact these mills frequently, to represent an established manufacturer of a product of recognized superiority. State approximate territory covered, and lines now represented by you. Address Box 155, c/o COTTON, Grant Bldg., Atlanta, Ga.

S. B. SCHWARTZ, C. E.
Textile Engineering
Appraisals & Liquidations of Mill Properties
Used Machinery for Home and Export
1050 CONSTANCE ST., NEW ORLEANS, LA.
Cable Address: Marquintex **Code: Bentley's**

ENGINE WANTED

Used late type economical steam engine about 350 H.P., with or without alternator. Give Description, condition, and price. P. O. Box 196, Macon, Georgia.

POSITION WANTED

Have had twenty-four years practical experience in cotton mill machine work, carding, spinning and winding. Superintendent of Southern textile mill for twenty-four years. Address Box 156, care COTTON, Grant Bldg., Atlanta, Ga.

GOLDENS' V-Belt Sheaves

Backed by Fifty Years Experience

Licensed By Allis-Chalmers Under Geist Patent No. 1,662,511

The fifty years manufacturing experience which stands back of Goldens' V-Belt Sheaves is a guarantee that they are accurately turned, well proportioned and balanced, strong and true-running and finely machined so they will add a considerable life to V-belts.

Goldens' V-Belt Sheaves can be furnished with grooves machined for any make of Licensed V-Belts. There are five different sets of arm patterns — Light, Medium, Heavy, Extra-Heavy and Double-Heavy — with thousands of different hub patterns — enabling us to produce the most efficient sheave for each particular installation.

A trial order will convince you of the Quality of our Sheaves.

GOLDENS' FOUNDRY & MACHINE CO.

COLUMBUS, GA.

Manufacturers Also of

Size Kettles
Continuous Dyeing Machines
Raw Stock Dyeing Machines
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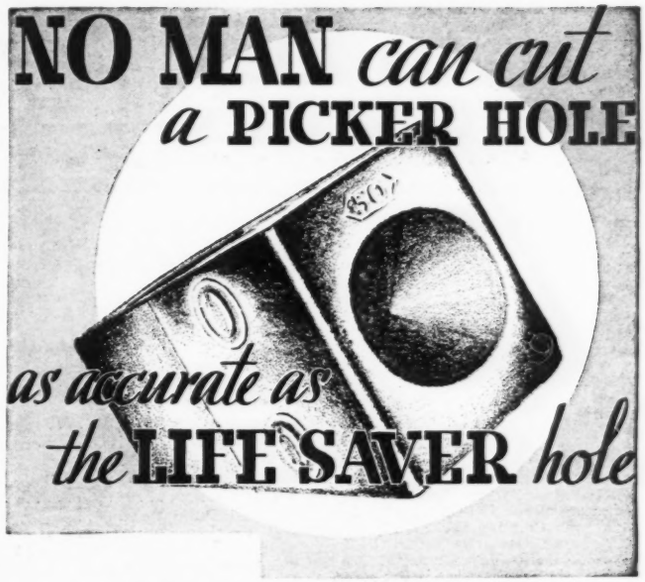
Cast Iron Tanks
Cloth Inspecting Machines
Hangers
Pillow Blocks
Gantt Couplings
Cast Iron Pulleys
Ball Bearing Transmission Equipment
Ball Bearing Blower and Fan Boxes

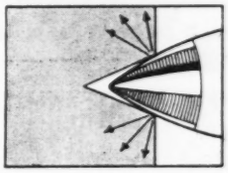
NO MAN *can cut a* PICKER HOLE



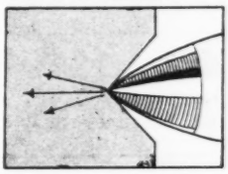
as accurate as the LIFE SAVER *hole*

The 50 TYPE PICKER *lasts longer* because the hole distributes the shock

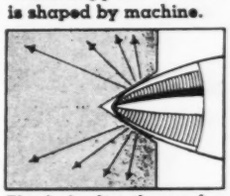
What happens when the hole is too small.



What happens when the hole is too shallow.



What happens when it is shaped by machine.



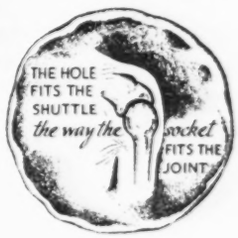
The hole distributes the shock over the greatest area.

The 50 Type Picker outlives any other picker 2 to 1, because it is the only picker with a machine-cut shuttle point hole (patented). The Life Saver hole — balanced between the rivets and correctly shaped for the shuttle point — takes the shock where the picker is strongest and spreads it evenly over the greatest area.

Loom Fixers Want — a picker that is easy to put on. The 50 Type Picker requires no trimming — no hole-cutting. Only selected cuts of specially processed leather are used. The strength of the leather is uniform.

With Telegraphic Speed

Cut your picker costs at least in half. Order from the nearest Graton and Knight distributor, whose name and telephone number you can get by phoning your local Western Union Office.



GRATON AND KNIGHT

Graton & Knight's 50 TYPE PICKER

THE PICKER WITH THE LIFE · SAVER HOLE

THE GRATON & KNIGHT CO.
WORCESTER, MASS.

2158

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COTTON GETS ACTION

From the October 1935 issue alone, 975 inquiries to advertisers were cleared through the Atlanta Office. Requesting descriptive literature and further data on products advertised, the inquiries came from practically every textile state and eight foreign countries.

A clear indication of how widely and thoroughly COTTON is read.

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AMANIL* NAPTHOL AS and ASSW
plus Fast Color SALTS and BASES
produce excellent results --

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PIECES • SKEINS • WARPS • ETC.

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EXPERT TECHNICAL SERVICE AVAILABLE

Consult our nearest Branch Office for samples and information.

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American Aniline Products, Inc.
50 UNION SQUARE NEW YORK, N. Y.

PLANT: Lock Haven, Pa.

BOSTON, MASS. PROVIDENCE, R. I. CHARLOTTE, N. C.
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THE SELLING POINTS OF PRINTS

TRUE, clear colors — on Silk, or Rayon, or Cotton — and all their mixtures!

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ROYCE
CHEMICAL COMPANY
CARLTON HILL · NEW JERSEY

New England Representatives:
RICHARD HAWORTH, 25 FOUNTAIN ST., PROVIDENCE, R. I.

Design by courtesy Hilvan Studio

ON PRINTS—CONTRASTS ARE YOUR SELLING POINTS

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YOUR GUIDE!
IN POWDER OR LUMP FORM